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CRPL-F 222 PART A

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PART A

IONOSPHERIC DATA

ISSUED
FEBRUARY 1963

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO



CRPL-F 222
PART A

NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

Issued
25 Feb. 1963

IONOSPHERIC DATA

CONTENTS

	<u>Page</u>
Ionospheric Data (revised text)	ii
Table of Smoothed Observed Zurich Sunspot Numbers	iii
World-Wide Sources of Ionospheric Data	iv
Tables of Ionospheric Data	1
Graphs of Ionospheric Data	26
Index of Tables and Graphs of Ionospheric Data in CRPL-F222 (Part A)	51

Unbacked copies of the graphs and charts printed in the F, Part A series, are available (beginning with the August 1962 issue) at the World Data Center A for Airglow and Ionosphere, National Bureau of Standards, Boulder, Colorado.

IONOSPHERIC DATA

The CRPL-F series bulletins are issued as part of the responsibility of the Central Radio Propagation Laboratory for the exchange and dissemination of ionospheric and related geophysical data. While originally a by-product of the collection of data by the CRPL for use in radio propagation studies, the CRPL-F series bulletins, Part A, "Ionospheric Data," and Part B, "Solar-Geophysical Data," have provided useful service by collecting and making available a wide variety of data in convenient form for use in research, not only on radio propagation and the ionosphere, but also on a wide variety of geophysical problems.

The current form of the tables of ionospheric data provides the monthly medians and, in addition, the number of values entering into median determination (count) for all ionospheric characteristics listed. Also, the upper and lower quartile values, indicated by UQ and LQ in the tables, are listed for foF₂, h'F₂, h'F, and M(3000)F₂. Quartile values are not listed for the other characteristics because of space limitations. The tables are prepared by IBM machine methods, which, by improving the speed and efficiency of preparation, permit earlier publication of the data.

Beginning with this issue, CRPL-F221, Part A, "Ionospheric Data," the hourly median values for the graphs of critical frequencies and M(3000)F₂ are plotted by machine methods instead of manually, as heretofore. Graphs of critical frequencies and M(3000)F₂ will continue to appear. Graphs of percentage of time of occurrence for fEs and virtual heights of the regular ionospheric layers are no longer included. This change was necessary to provide space for the enlarged tables. Data on percentage of time of occurrence of fEs above 3, 5, and 7 Mc are still available from the CRPL and the IGY World Data Center A for Airglow and Ionosphere.

For many years, the tables of ionospheric data appearing in the F series, Part A, listed values of medians recomputed at CRPL. While this practice enforced a certain uniformity, it was subject to some valid criticism for tampering with original data. The tables and graphs now show the ionospheric data just as they are provided by the originating laboratory. Responsibility for the accuracy and reliability of the data now rests entirely with the originator.

Gaps in the tables when data normally might be expected indicate the data were not provided by the originator. Following the recommendation of the World-Wide Soundings Committee, only values of median foEs are listed. In the few cases where fEs is still reported instead of foEs, the data will not be printed. Data will appear in the F series, Part A, only when the complete daily-hourly tabulations have been received by the CRPL or the IGY World Data Center A for Airglow and Ionosphere.

Information on symbols, terminology, and conventions may be found in the "URSI Handbook of Ionogram Interpretation and Reduction, of the World-Wide Soundings Committee," edited by W. R. Piggott and K. Rawer (Elsevier, 1961), which supersedes previous documents. A list of symbols is available from CRPL on request.

The following table contains the latest available information on smoothed observed Zurich sunspot numbers, beginning with the minimum of April 1954. Final numbers are listed through June 1961, the succeeding values being based on provisional data.

Smoothed Observed Zurich Sunspot Number

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1954				3	4	4	5	7	8	8	9	12
1955	14	16	19	23	29	35	40	46	55	64	73	81
1956	89	98	109	119	127	137	146	150	151	156	160	164
1957	170	172	174	181	186	188	191	194	197	200	201	200
1958	199	201	201	197	191	187	185	185	184	182	181	180
1959	179	177	174	169	165	161	156	151	146	141	137	132
1960	129	125	122	120	117	114	109	102	98	93	88	84
1961	80	75	69	64	60	56	53	52	52	51	50	48
1962	44	41	39	38	38	37	36					

Units of Ionospheric Data Tables

foF2, foEs - - - Tenths of a megacycle
 foF1, FoE - - - Hundredths of a megacycle
 h'F2, h'F, h'E - Kilometers
 (M3000)F2 - - - Hundredths

NOTE: Occasionally, when the median falls between two of the observed values, the median is carried an extra decimal place beyond these units. Those cases are easily identifiable by the extra digit appearing to the right of the number, in a column usually left blank.

MED - Median

CNT - Count

UQ - Upper Quartile

LQ - Lower Quartile

WORLD-WIDE SOURCES OF IONOSPHERIC DATA

THE IONOSPHERIC DATA GIVEN IN TABLES 1 TO 100 AND FIGURES 1 TO 100 WERE ASSEMBLED BY THE CENTRAL RADIO PROPAGATION LABORATORY FOR ANALYSIS, CORRELATION AND DISTRIBUTION. THE FOLLOWING ARE THE SOURCES OF THE DATA IN THIS ISSUE:

COMMONWEALTH OF AUSTRALIA, IONOSPHERIC PREDICTION SERVICE OF THE COMMONWEALTH OBSERVATORY.

BRISBANE, AUSTRALIA
TOWNSVILLE, AUSTRALIA

AUSTRALIAN DEPARTMENT OF NATIONAL DEVELOPMENT, BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS.

PORT MORESBY, PAPUA

BELGIAN ROYAL METEOROLOGICAL INSTITUTE.
DOURBES, BELGIUM

ELECTRONICS DIRECTORATE OF THE BRAZILIAN NAVY.
NATAL, BRAZIL

ESCOLA POLITECNICA, UNIVERSITY OF SAO PAULO.
SAO PAULO, BRAZIL

BRITISH DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH,
RADIO RESEARCH BOARD.

IBADAN, NIGERIA
PORT LOCKROY, ANTARCTICA
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WINNIPEG, CANADA

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CONCEPCION, CHILE

DANISH NATIONAL COMMITTEE OF URSI.
GODHAVN, GREENLAND

IONOSPHERIC RESEARCH GROUP (GRI), FRANCE.
BANGUI, FRENCH EQUATORIAL AFRICA
DJIBOUTI, FRENCH SOMALILAND
PARIS, FRANCE
POITIERS, FRANCE
RABAT, MOROCCO
TAHITI, SOCIETY IS.
TAMANRASSET, ALGERIA
TANANARIVE, MALAGASY REPUBLIC

HEINRICH HERTZ INSTITUTE, GERMAN ACADEMY OF SCIENCES, BERLIN,
GERMANY.

JULIUSRUH/RUGEN, GERMANY

INSTITUTE FOR IONOSPHERIC RESEARCH, LINDAU UBER NORTHEIM,
HANNOVER, GERMANY.

LINDAU/HARZ, GERMANY

IONOSPHERIC INSTITUTE, BREISACH, GERMANY.
FREIBURG, GERMANY

ICELANDIC POST AND TELEGRAPH ADMINISTRATION.
REYKJAVIK, ICELAND

INDIAN COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH,
RADIO RESEARCH COMMITTEE, NEW DELHI, INDIA.

AHMEDABAD, INDIA

BOMBAY, INDIA

CALCUTTA, INDIA

DELHI, INDIA

KODAIKANAL, INDIA

MADRAS, INDIA

TIRUCHY, INDIA

TRIVANDRUM, INDIA

NATIONAL INSTITUTE OF GEOPHYSICS, CITY UNIVERSITY, ROME, ITALY.
ROME, ITALY

METEOROLOGICAL SERVICE, PROVINCE OF MACAU, ASIA.
MACAU

RESEARCH INSTITUTE OF NATIONAL DEFENCE, STOCKHOLM, SWEDEN.
UPPSALA, SWEDEN

UNITED STATES ARMY SIGNAL CORPS, UNITED STATES OF AMERICA

ADAK, ALASKA

GRAND BAHAMA I.

WHITE SANDS, NEW MEXICO

NATIONAL BUREAU OF STANDARDS, UNITED STATES OF AMERICA
(CENTRAL RADIO PROPAGATION LABORATORY).

ANCHORAGE, ALASKA

FAIRBANKS, ALASKA

HUANCAYO, PERU

POINT BARROW, ALASKA

POLE STATION

TALARÁ, PERU

TABLES OF IONOSPHERIC DATA

1

TIME 150.0W

四六 720

FORTUNAY 196

TABLE S

STEP 1.0 MC TO 25.0 MC IN 27 SECONDS.

SWEET 1.0 MC TO 25.0 MC IN 13.5 SECONDS

10

P 40 MC TO 228 MC IN 27 SECONDS.

TABLE 9

EEP 1.0 MC TO 25.0 MC IN 2 MINUTES.

SWEET 1+6 MC TO 20.0 MC IN 15 SECONDS.
NOVEMBER 196

TABLE 10

Cet. M. B. R. e. 1961

SWEET 1+6 MC TO 20.0 MC IN 15 SECONDS.
NOVEMBER 196

TABLE II

TÄTIGKEIT 13

DEPARTMENT OF STATE
SEPTEMBER 1, 1945

TABLE 17
REYKJAVIK, ICELANDTABLE 18
ANNEDABAO, NO. 16
11:30 A.M., 72-051

TIME, 12:00A.																		
TIME, 12:00P.																		
HOUR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17
fo F2	MED	D	AQ	O	305	1	0	135	46	47	69	21	52	505	525	26	57	21
CNT	CNT	CNT	CNT	CNT	59	5	1	39	52	52	52	52	52	52	52	52	52	52
UO	UO	UO	UO	UO	34	31	32	35	43	46	50	51	51	52	52	52	52	52
LO	LO	LO	LO	LO	36	34	31	32	35	43	46	50	51	52	52	52	52	52
h F2	MED	MED	MED	MED	2	4	5	5	5	5	5	5	5	5	5	5	5	5
CNT	CNT	CNT	CNT	CNT	4	4	4	4	4	4	4	4	4	4	4	4	4	4
UO	UO	UO	UO	UO	4	4	4	4	4	4	4	4	4	4	4	4	4	4
LO	LO	LO	LO	LO	4	4	4	4	4	4	4	4	4	4	4	4	4	4
h' F	MED	U	U	U	305	310	315	320	325	330	335	340	345	350	355	360	365	370
AFT	AFT	AFT	AFT	AFT	31	31	31	31	31	31	31	31	31	31	31	31	31	31
UO	UO	UO	UO	UO	32	32	32	32	32	32	32	32	32	32	32	32	32	32
LO	LO	LO	LO	LO	32	32	32	32	32	32	32	32	32	32	32	32	32	32
M3000(F2)	MED	MED	MED	MED	1	*	350	350	350	350	350	350	350	350	350	350	350	
CNT	CNT	CNT	CNT	CNT	350	350	350	350	350	350	350	350	350	350	350	350	350	350
UO	UO	UO	UO	UO	350	350	350	350	350	350	350	350	350	350	350	350	350	350
LO	LO	LO	LO	LO	350	350	350	350	350	350	350	350	350	350	350	350	350	350
fo F1	MED	MED	MED	MED	*	3	385	405	425	445	465	485	505	525	545	565	585	
CNT	CNT	CNT	CNT	CNT	*	3	390	410	430	450	470	490	510	530	550	570	590	
UO	UO	UO	UO	UO	*	3	395	415	435	455	475	495	515	535	555	575	595	
LO	LO	LO	LO	LO	*	3	400	420	440	460	480	500	520	540	560	580	590	
fo E	MED	MED	MED	MED	*	4	380	400	420	440	460	480	500	520	540	560	580	
CNT	CNT	CNT	CNT	CNT	*	4	385	405	425	445	465	485	505	525	545	565	585	
UO	UO	UO	UO	UO	*	4	390	410	430	450	470	490	510	530	550	570	590	
LO	LO	LO	LO	LO	*	4	395	415	435	455	475	495	515	535	555	575	595	
h' E	MED	MED	MED	MED	*	5	380	400	420	440	460	480	500	520	540	560	580	
CNT	CNT	CNT	CNT	CNT	*	5	385	405	425	445	465	485	505	525	545	565	585	
UO	UO	UO	UO	UO	*	5	390	410	430	450	470	490	510	530	550	570	590	
LO	LO	LO	LO	LO	*	5	395	415	435	455	475	495	515	535	555	575	595	
fo E	MED	MED	MED	MED	*	6	380	400	420	440	460	480	500	520	540	560	580	
CNT	CNT	CNT	CNT	CNT	*	6	385	405	425	445	465	485	505	525	545	565	585	
UO	UO	UO	UO	UO	*	6	390	410	430	450	470	490	510	530	550	570	590	
LO	LO	LO	LO	LO	*	6	395	415	435	455	475	495	515	535	555	575	595	
h F2	MED	MED	MED	MED	*	7	380	400	420	440	460	480	500	520	540	560	580	
CNT	CNT	CNT	CNT	CNT	*	7	385	405	425	445	465	485	505	525	545	565	585	
UO	UO	UO	UO	UO	*	7	390	410	430	450	470	490	510	530	550	570	590	
LO	LO	LO	LO	LO	*	7	395	415	435	455	475	495	515	535	555	575	595	
fo F1	MED	MED	MED	MED	*	8	380	400	420	440	460	480	500	520	540	560	580	
CNT	CNT	CNT	CNT	CNT	*	8	385	405	425	445	465	485	505	525	545	565	585	
UO	UO	UO	UO	UO	*	8	390	410	430	450	470	490	510	530	550	570	590	
LO	LO	LO	LO	LO	*	8	395	415	435	455	475	495	515	535	555	575	595	
h' F	MED	MED	MED	MED	*	9	380	400	420	440	460	480	500	520	540	560	580	
CNT	CNT	CNT	CNT	CNT	*	9	385	405	425	445	465	485	505	525	545	565	585	
UO	UO	UO	UO	UO	*	9	390	410	430	450	470	490	510	530	550	570	590	
LO	LO	LO	LO	LO	*	9	395	415	435	455	475	495	515	535	555	575	595	
h F2	MED	MED	MED	MED	*	10	380	400	420	440	460	480	500	520	540	560	580	
CNT	CNT	CNT	CNT	CNT	*	10	385	405	425	445	465	485	505	525	545	565	585	
UO	UO	UO	UO	UO	*	10	390	410	430	450	470	490	510	530	550	570	590	
LO	LO	LO	LO	LO	*	10	395	415	435	455	475	495	515	535	555	575	595	
fo E	MED	MED	MED	MED	*	11	380	400	420	440	460	480	500	520	540	560	580	
CNT	CNT	CNT	CNT	CNT	*	11	385	405	425	445	465	485	505	525	545	565	585	
UO	UO	UO	UO	UO	*	11	390	410	430	450	470	490	510	530	550	570	590	
LO	LO	LO	LO	LO	*	11	395	415	435	455	475	495	515	535	555	575	595	
h' E	MED	MED	MED	MED	*	12	380	400	420	440	460	480	500	520	540	560	580	
CNT	CNT	CNT	CNT	CNT	*	12	385	405	425	445	465	485	505	525	545	565	585	
UO	UO	UO	UO	UO	*	12	390	410	430	450	470	490	510	530	550	570	590	
LO	LO	LO	LO	LO	*	12	395	415	435	455	475	495	515	535	555	575	595	
fo F1	MED	MED	MED	MED	*	13	380	400	420	440	460	480	500	520	540	560	580	
CNT	CNT	CNT	CNT	CNT	*	13	385	405	425	445	465	485	505	525	545	565	585	
UO	UO	UO	UO	UO	*	13	390	410	430	450	470	490	510	530	550	570	590	
LO	LO	LO	LO	LO	*	13	395	415	435	455	475	495	515	535	555	575	595	
h' F	MED	MED	MED	MED	*	14	380	400	420	440	460	480	500	520	540	560	580	
CNT	CNT	CNT	CNT	CNT	*	14	385	405	425	445	465	485	505	525	545	565	585	
UO	UO	UO	UO	UO	*	14	390	410	430	450	470	490	510	530	550	570	590	
LO	LO	LO	LO	LO	*	14	395	415	435	455	475	495	515	535	555	575	595	
h F2	MED	MED	MED	MED	*	15	380	400	420	440	460	480	500	520	540	560	580	
CNT	CNT	CNT	CNT	CNT	*	15	385	405	425	445	465	485	505	525	545	565	585	
UO	UO	UO	UO	UO	*	15	390	410	430	450	470	490	510	530	550	570	590	
LO	LO	LO	LO	LO	*	15	395	415	435	455	475	495	515	535	555	575	595	
fo E	MED	MED	MED	MED	*	16	380	400	420	440	460	480	500	520	540	560	580	
CNT	CNT	CNT	CNT	CNT	*	16	385	405	425	445	465	485	505	525	545	565	585	
UO	UO	UO	UO	UO	*	16	390	410	430	450	470	490	510	530	550	570	590	
LO	LO	LO	LO	LO	*	16	395	415	435	455	475	495	515	535	555	575	595	
h' E	MED	MED	MED	MED	*	17	380	400	420	440	460	480	500	520	540	560	580	
CNT	CNT	CNT	CNT	CNT	*	17	385	405	425	445	465	485	505	525	545	565	585	
UO	UO	UO	UO	UO	*	17	390	410	430	450	470	490	510	530	550	570	590	
LO	LO	LO	LO	LO	*	17	395	415	435	455	475	495	515	535	555	575	595	
fo F1	MED	MED	MED	MED	*	18	380	400	420	440	460	480	500	520	540	560	580	
CNT	CNT	CNT	CNT	CNT	*	18	385	405	425	445	465	485	505	525	545	565	585	
UO	UO	UO	UO	UO	*	18	390	410	430	450	470	490	510	530	550	570	590	
LO	LO	LO	LO	LO	*	18	395	415	435	455	475	495	515	535	555	575	595	
h' F	MED	MED	MED	MED	*	19	380	400	420	440	460	480	500	520	540	560	580	
CNT	CNT	CNT	CNT	CNT	*	19	385	405	425	445	465	485	505	525	545	565	585	
UO	UO	UO	UO	UO	*	19	390	410	430	450	470	490	510	530	550	570	590	
LO	LO	LO	LO	LO	*	19	395	415	435	455	475	495	515	535	555	575		

NIGHTMING

1 • 1961

7

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TABLE 2

TABLE 20

33

TABLE 34

EEP 1=0 MC TO 16⁰ MC IN 1 MINUTE 55 SECONDS.

FEBRUARY • 1961

JANUARY, 1940

THE JOURNAL OF CLIMATE

TABLE 30

37

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TABLE 44

SERIALS

TABLE I

42

HOUR	15:01*18° + 40.0°												T _{15:01}		T _{15:01}											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
16 F2	MED	5.6	5.3	4.0	4.7	4.9	5.4	6.9	7.4	7.0	7.6	7.7	7.6	7.3	7.1	7.0	7.1	7.1	7.0	6.9	6.2	5.9	5.6	5.4		
	CNT	5.6	5.3	4.0	4.7	4.9	5.4	6.9	7.4	7.0	7.6	7.7	7.6	7.3	7.1	7.0	7.1	7.1	7.0	6.9	6.2	5.9	5.6	5.4		
	UD	5.2	4.9	3.6	4.3	4.5	5.0	6.5	7.0	6.6	7.2	7.3	7.2	6.9	6.7	6.6	6.5	6.5	6.4	6.3	5.6	5.3	5.0	4.8	4.6	
16 F2	LO	5.1	4.7	3.4	4.1	4.3	4.8	6.3	6.8	6.4	7.0	7.1	7.0	6.7	6.5	6.4	6.3	6.3	6.2	6.1	5.4	5.1	4.8	4.6	4.4	
16 F1	MED	8.6	8.4	7.1	7.8	8.0	8.6	9.0	9.4	8.1	8.7	8.8	8.7	8.4	8.2	8.0	7.8	7.7	7.6	7.5	7.4	7.0	6.6	6.3	6.1	
	CNT	8.6	8.4	7.1	7.8	8.0	8.6	9.0	9.4	8.1	8.7	8.8	8.7	8.4	8.2	8.0	7.8	7.7	7.6	7.5	7.4	7.0	6.6	6.3	6.1	
	UD	8.2	7.9	6.6	7.3	7.5	8.1	8.6	9.0	7.8	8.4	8.5	8.4	8.1	7.9	7.7	7.6	7.5	7.4	7.3	6.7	6.3	6.0	5.8	5.6	
16 F1	LO	8.1	7.8	6.5	7.2	7.4	8.0	8.5	8.9	7.7	8.3	8.4	8.3	8.0	7.8	7.6	7.5	7.4	7.3	7.2	6.6	6.2	5.9	5.7	5.5	
MI3000/F	MED	2.7	2.4	1.9	2.6	2.8	3.5	3.0	3.1	2.9	3.0	2.9	2.9	2.6	2.4	2.2	2.0	2.0	2.0	2.0	1.9	1.7	1.5	1.3	1.1	
	CNT	2.7	2.4	1.9	2.6	2.8	3.5	3.0	3.1	2.9	3.0	2.9	2.9	2.6	2.4	2.2	2.0	2.0	2.0	2.0	1.9	1.7	1.5	1.3	1.1	
	UD	2.6	2.3	1.8	2.5	2.7	3.4	2.9	3.0	2.8	2.9	2.8	2.8	2.5	2.3	2.1	1.9	1.9	1.9	1.9	1.8	1.6	1.4	1.2	1.0	
16 F1	LO	2.5	2.2	1.7	2.4	2.6	3.3	2.8	2.9	2.7	2.8	2.7	2.7	2.4	2.2	2.0	1.8	1.8	1.8	1.8	1.7	1.5	1.3	1.1	0.9	0.7
16 E2	MED	1.4	1.2	0.9	1.3	1.5	1.8	1.7	1.9	1.5	1.6	1.7	1.6	1.4	1.2	1.0	0.9	0.9	0.9	0.9	0.8	0.6	0.4	0.2	0.1	0.0
	CNT	1.4	1.2	0.9	1.3	1.5	1.8	1.7	1.9	1.5	1.6	1.7	1.6	1.4	1.2	1.0	0.9	0.9	0.9	0.9	0.8	0.6	0.4	0.2	0.1	0.0
	UD	1.3	1.1	0.8	1.2	1.4	1.7	1.6	1.8	1.4	1.5	1.6	1.5	1.3	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.5	0.3	0.1	0.0	0.0
16 E2	LO	1.2	1.0	0.7	1.1	1.3	1.6	1.5	1.7	1.3	1.4	1.5	1.4	1.2	1.0	0.8	0.7	0.7	0.7	0.7	0.6	0.4	0.2	0.1	0.0	0.0
16 E1	MED	1.1	0.9	0.6	1.0	1.2	1.5	1.4	1.6	1.2	1.3	1.4	1.3	1.1	0.9	0.7	0.6	0.6	0.6	0.6	0.5	0.3	0.1	0.0	0.0	0.0
	CNT	1.1	0.9	0.6	1.0	1.2	1.5	1.4	1.6	1.2	1.3	1.4	1.3	1.1	0.9	0.7	0.6	0.6	0.6	0.6	0.5	0.3	0.1	0.0	0.0	0.0
	UD	1.0	0.8	0.5	0.9	1.1	1.4	1.3	1.5	1.1	1.2	1.3	1.2	1.0	0.8	0.6	0.5	0.5	0.5	0.5	0.4	0.2	0.0	0.0	0.0	0.0

SLEEP 1:00 AM TO 2:00 AM IN 3 MINUTES.

TABLE 44											
PORT LOCKPORT											
(16.6±5.3, 63.5±5.6)											
HOUR	00	01	02	03	04	05	06	07	08	09	10
16 F 2	MED	+ .4	+ .3	+ .1	- .2	+ .4	+ .4	+ .1	+ .0	+ .0	+ .0
	CNT	+ .4	+ .3	+ .1	- .2	+ .4	+ .4	+ .1	+ .0	+ .0	+ .0
	UD	+ .4	+ .3	+ .1	- .2	+ .4	+ .4	+ .1	+ .0	+ .0	+ .0
	LO	+ .4	+ .3	+ .1	- .2	+ .4	+ .4	+ .1	+ .0	+ .0	+ .0
h F 2	MED	+ .2	+ .1	+ .0	+ .1	+ .2	+ .1	+ .2	+ .1	+ .0	+ .0
	CNT	+ .2	+ .1	+ .0	+ .1	+ .2	+ .1	+ .2	+ .1	+ .0	+ .0
	UD	+ .2	+ .1	+ .0	+ .1	+ .2	+ .1	+ .2	+ .1	+ .0	+ .0
	LO	+ .2	+ .1	+ .0	+ .1	+ .2	+ .1	+ .2	+ .1	+ .0	+ .0
h F 2	MED	+ .2	+ .1	+ .0	+ .1	+ .2	+ .1	+ .2	+ .1	+ .0	+ .0
	CNT	+ .2	+ .1	+ .0	+ .1	+ .2	+ .1	+ .2	+ .1	+ .0	+ .0
	UD	+ .2	+ .1	+ .0	+ .1	+ .2	+ .1	+ .2	+ .1	+ .0	+ .0
	LO	+ .2	+ .1	+ .0	+ .1	+ .2	+ .1	+ .2	+ .1	+ .0	+ .0
MB3000/F2	MED	+ .4	+ .3	+ .1	- .2	+ .5	+ .4	+ .3	+ .2	+ .1	+ .0
	CNT	+ .4	+ .3	+ .1	- .2	+ .5	+ .4	+ .3	+ .2	+ .1	+ .0
	UD	+ .4	+ .3	+ .1	- .2	+ .5	+ .4	+ .3	+ .2	+ .1	+ .0
	LO	+ .4	+ .3	+ .1	- .2	+ .5	+ .4	+ .3	+ .2	+ .1	+ .0
fo F 1	MED	+ .1	+ .0	+ .0	+ .1	+ .2	+ .1	+ .2	+ .1	+ .0	+ .0
	CNT	+ .1	+ .0	+ .0	+ .1	+ .2	+ .1	+ .2	+ .1	+ .0	+ .0
16 E	MED	+ .1	+ .0	+ .0	+ .1	+ .2	+ .1	+ .2	+ .1	+ .0	+ .0
	CNT	+ .1	+ .0	+ .0	+ .1	+ .2	+ .1	+ .2	+ .1	+ .0	+ .0
h E	MED	+ .1	+ .0	+ .0	+ .1	+ .2	+ .1	+ .2	+ .1	+ .0	+ .0
	CNT	+ .1	+ .0	+ .0	+ .1	+ .2	+ .1	+ .2	+ .1	+ .0	+ .0
16 E	MED	+ .1	+ .0	+ .0	+ .1	+ .2	+ .1	+ .2	+ .1	+ .0	+ .0
	CNT	+ .1	+ .0	+ .0	+ .1	+ .2	+ .1	+ .2	+ .1	+ .0	+ .0

226

266

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Autumnal Equinox, September 22, 1902.

APKIL • 1960

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53

1000 MC IN 5 MINUTES! MANUAL

January 1961

TABLE 54

SWEEP 1-5 MC TO 100 MC IN 5 MINUTES! MANUAL

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• IN 27 SECONDS.

Age 56

W-22 • IN 5 MINUTES • MANUAL

- 10 -

100 MC TO 250 MC IN 35 SECONDS.

TABLE 59

MINI TEND

ANJANTY अन्जनती अन्जनती अन्जनती अन्जनती

25

870

54

1955 N.Y. 4-10001 M/T TO 16.0 MM IN 5 MINUTES AUTOMATIC

270

TABLE II

APRIL 1951

TABLE 56

	10	-	12	13	14	15	16	17	18	19	20	21	22	23
14.0	14.5	-	15.1	-	15.7	-	16.3	-	17.0	17.6	18.2	-	-	-
12.6	12.9	-	13.4	-	13.9	-	14.4	-	15.0	15.6	16.2	-	-	-
13.4	14.8	-	14.1	-	14.7	-	15.2	-	15.8	16.4	17.0	-	-	-
13.5	14.2	-	13.7	-	14.3	-	14.8	-	15.4	16.0	16.6	-	-	-
12.0	12.5	-	12.9	-	13.4	-	13.9	-	14.5	15.1	15.7	-	-	-
12.4	12.8	-	13.1	-	13.6	-	14.1	-	14.7	15.3	15.9	-	-	-
12.5	12.9	-	13.2	-	13.7	-	14.2	-	14.8	15.4	16.0	-	-	-
12.6	13.0	-	13.3	-	13.8	-	14.3	-	14.9	15.5	16.1	-	-	-
12.7	13.1	-	13.4	-	13.9	-	14.4	-	15.0	15.6	16.2	-	-	-
12.8	13.2	-	13.5	-	14.0	-	14.5	-	15.1	15.7	16.3	-	-	-
12.9	13.3	-	13.6	-	14.1	-	14.6	-	15.2	15.8	16.4	-	-	-
13.0	13.4	-	13.7	-	14.2	-	14.7	-	15.3	15.9	16.5	-	-	-
13.1	13.5	-	13.8	-	14.3	-	14.8	-	15.4	16.0	16.6	-	-	-
13.2	13.6	-	13.9	-	14.4	-	14.9	-	15.5	16.1	16.7	-	-	-
13.3	13.7	-	14.0	-	14.5	-	15.0	-	15.6	16.2	16.8	-	-	-
13.4	13.8	-	14.1	-	14.6	-	15.1	-	15.7	16.3	16.9	-	-	-
13.5	13.9	-	14.2	-	14.7	-	15.2	-	15.8	16.4	17.0	-	-	-
13.6	14.0	-	14.3	-	14.8	-	15.3	-	15.9	16.5	17.1	-	-	-
13.7	14.1	-	14.4	-	14.9	-	15.4	-	16.0	16.6	17.2	-	-	-
13.8	14.2	-	14.5	-	15.0	-	15.5	-	16.1	16.7	17.3	-	-	-
13.9	14.3	-	14.6	-	15.1	-	15.6	-	16.2	16.8	17.4	-	-	-
14.0	14.4	-	14.7	-	15.2	-	15.7	-	16.3	16.9	17.5	-	-	-
14.1	14.5	-	14.8	-	15.3	-	15.8	-	16.4	17.0	17.6	-	-	-
14.2	14.6	-	14.9	-	15.4	-	15.9	-	16.5	17.1	17.7	-	-	-
14.3	14.7	-	15.0	-	15.5	-	16.0	-	16.6	17.2	17.8	-	-	-
14.4	14.8	-	15.1	-	15.6	-	16.1	-	16.7	17.3	17.9	-	-	-
14.5	14.9	-	15.2	-	15.7	-	16.2	-	16.8	17.4	18.0	-	-	-
14.6	15.0	-	15.3	-	15.8	-	16.3	-	16.9	17.5	18.1	-	-	-
14.7	15.1	-	15.4	-	15.9	-	16.4	-	17.0	17.6	18.2	-	-	-
14.8	15.2	-	15.5	-	16.0	-	16.5	-	17.1	17.7	18.3	-	-	-
14.9	15.3	-	15.6	-	16.1	-	16.6	-	17.2	17.8	18.4	-	-	-
15.0	15.4	-	15.7	-	16.2	-	16.7	-	17.3	17.9	18.5	-	-	-
15.1	15.5	-	15.8	-	16.3	-	16.8	-	17.4	18.0	18.6	-	-	-
15.2	15.6	-	15.9	-	16.4	-	16.9	-	17.5	18.1	18.7	-	-	-
15.3	15.7	-	16.0	-	16.5	-	17.0	-	17.6	18.2	18.8	-	-	-
15.4	15.8	-	16.1	-	16.6	-	17.1	-	17.7	18.3	18.9	-	-	-
15.5	15.9	-	16.2	-	16.7	-	17.2	-	17.8	18.4	19.0	-	-	-
15.6	16.0	-	16.3	-	16.8	-	17.3	-	17.9	18.5	19.1	-	-	-
15.7	16.1	-	16.4	-	16.9	-	17.4	-	18.0	18.6	19.2	-	-	-
15.8	16.2	-	16.5	-	17.0	-	17.5	-	18.1	18.7	19.3	-	-	-
15.9	16.3	-	16.6	-	17.1	-	17.6	-	18.2	18.8	19.4	-	-	-
16.0	16.4	-	16.7	-	17.2	-	17.7	-	18.3	18.9	19.5	-	-	-
16.1	16.5	-	16.8	-	17.3	-	17.8	-	18.4	19.0	19.6	-	-	-
16.2	16.6	-	16.9	-	17.4	-	17.9	-	18.5	19.1	19.7	-	-	-
16.3	16.7	-	17.0	-	17.5	-	18.0	-	18.6	19.2	19.8	-	-	-
16.4	16.8	-	17.1	-	17.6	-	18.1	-	18.7	19.3	19.9	-	-	-
16.5	16.9	-	17.2	-	17.7	-	18.2	-	18.8	19.4	20.0	-	-	-
16.6	17.0	-	17.3	-	17.8	-	18.3	-	18.9	19.5	20.1	-	-	-
16.7	17.1	-	17.4	-	17.9	-	18.4	-	19.0	19.6	20.2	-	-	-
16.8	17.2	-	17.5	-	18.0	-	18.5	-	19.1	19.7	20.3	-	-	-
16.9	17.3	-	17.6	-	18.1	-	18.6	-	19.2	19.8	20.4	-	-	-
17.0	17.4	-	17.7	-	18.2	-	18.7	-	19.3	19.9	20.5	-	-	-
17.1	17.5	-	17.8	-	18.3	-	18.8	-	19.4	20.0	20.6	-	-	-
17.2	17.6	-	17.9	-	18.4	-	18.9	-	19.5	20.1	20.7	-	-	-
17.3	17.7	-	18.0	-	18.5	-	19.0	-	19.6	20.2	20.8	-	-	-
17.4	17.8	-	18.1	-	18.6	-	19.1	-	19.7	20.3	20.9	-	-	-
17.5	17.9	-	18.2	-	18.7	-	19.2	-	19.8	20.4	21.0	-	-	-
17.6	18.0	-	18.3	-	18.8	-	19.3	-	19.9	20.5	21.1	-	-	-
17.7	18.1	-	18.4	-	18.9	-	19.4	-	20.0	20.6	21.2	-	-	-
17.8	18.2	-	18.5	-	19.0	-	19.5	-	20.1	20.7	21.3	-	-	-
17.9	18.3	-	18.6	-	19.1	-	19.6	-	20.2	20.8	21.4	-	-	-
18.0	18.4	-	18.7	-	19.2	-	19.7	-	20.3	20.9	21.5	-	-	-
18.1	18.5	-	18.8	-	19.3	-	19.8	-	20.4	21.0	21.6	-	-	-
18.2	18.6	-	18.9	-	19.4	-	19.9	-	20.5	21.1	21.7	-	-	-
18.3	18.7	-	19.0	-	19.5	-	20.0	-	20.6	21.2	21.8	-	-	-
18.4	18.8	-	19.1	-	19.6	-	20.1	-	20.7	21.3	21.9	-	-	-
18.5	18.9	-	19.2	-	19.7	-	20.2	-	20.8	21.4	22.0	-	-	-
18.6	19.0	-	19.3	-	19.8	-	20.3	-	20.9	21.5	22.1	-	-	-
18.7	19.1	-	19.4	-	19.9	-	20.4	-	21.0	21.6	22.2	-	-	-
18.8	19.2	-	19.5	-	20.0	-	20.5	-	21.1	21.7	22.3	-	-	-
18.9	19.3	-	19.6	-	20.1	-	20.6	-	21.2	21.8	22.4	-	-	-
19.0	19.4	-	19.7	-	20.2	-	20.7	-	21.3	21.9	22.5	-	-	-
19.1	19.5	-	19.8	-	20.3	-	20.8	-	21.4	22.0	22.6	-	-	-
19.2	19.6	-	19.9	-	20.4	-	20.9	-	21.5	22.1	22.7	-	-	-
19.3	19.7	-	20.0	-	20.5	-	21.0	-	21.6	22.2	22.8	-	-	-
19.4	19.8	-	20.1	-	20.6	-	21.1	-	21.7	22.3	22.9	-	-	-
19.5	19.9	-	20.2	-	20.7	-	21.2	-	21.8	22.4	23.0	-	-	-
19.6	20.0	-	20.3	-	20.8	-	21.3	-	21.9	22.5	23.1	-	-	-
19.7	20.1	-	20.4	-	20.9	-	21.4	-	22.0	22.6	23.2	-	-	-
19.8	20.2	-	20.5	-	21.0	-	21.5	-	22.1	22.7	23.3	-	-	-
19.9	20.3	-	20.6	-	21.1	-	21.6	-	22.2	22.8	23.4	-	-	-
20.0	20.4	-	20.7	-	21.2	-	21.7	-	22.3	22.9	23.5	-	-	-
20.1	20.5	-	20.8	-	21.3	-	21.8	-	22.4	23.0	23.6	-	-	-
20.2	20.6	-	20.9	-	21.4	-	21.9	-	22.5	23.1	23.7	-	-	-
20.3	20.7	-	21.0	-	21.5	-	22.0	-	22.6	23.2	23.8	-	-	-
20.4	20.8	-	21.1	-	21.6	-	22.1	-	22.7	23.3	23.9	-	-	-
20.5	20.9	-	21.2	-	21.7	-	22.2	-	22.8	23.4	24.0	-	-	-
20.6	21.0	-	21.3	-	21.8	-	22.3	-	22.9	23.5	24.1	-	-	-
20.7	21.1	-	21.4	-	21.9	-	22.4	-	23.0	23.6	24.2	-	-	-
20.8	21.2	-	21.5	-	22.0	-	22.5	-	23.1	23.7	24.3	-	-	-
20.9	21.3	-	21.6	-	22.1	-	22.6	-	23.2	23.8	24.4	-	-	-
21.0	21.4	-	21.7	-	22.2	-	22.7	-	23.3	23.9	24.5	-	-	-
21.1	21.5	-	21.8	-	22.3	-	22.8	-	23.4	24.0	24.6	-	-	-
21.2	21.6	-	21.9	-	22.4	-	22.9	-	23.5	24.1	24.7	-	-	-
21.3	21.7	-	22.0	-	22.5	-	23.0	-	23.6	24.2	24.8	-	-	-
21.4	21.8	-	22.1	-	22.6	-	23.1	-	23.7	24.3	24.9	-	-	-
21.5	21.9	-	22.2	-	22.7	-	23.2	-	23.8	24.4	25.0	-	-	-
21.6	22.0	-	22.3	-	22.8	-	23.3	-	23.9	24.5	25.1	-	-	-
21.7	22.1	-	22.4	-	22.9	-	23.4	-	24.0	24.6	25.2	-	-	-
21.8	22.2	-	22.5	-	23.0	-	23.5	-	24.1	24.7	25.3	-	-	-
21.9	22.3	-	22.6	-	23.1	-	23.6	-	24.2	24.8	25.4	-	-	-
22.0	22.4	-	22.7	-	23.2	-	23.7	-	24.3	24.9	25.5	-	-	-
22.1	22.5	-	22.8	-	23.3	-	23.8	-	24.4	25.0	25.6	-	-	-
22.2	22.6	-	22.9	-	23.4	-	23.9	-	24.5	25.1	25.7	-	-	-
22.3	22.7	-	23.0	-	23.5	-	24.0	-	24.6	25.2	25.8	-	-	-
22.4	22.8	-	23.1	-	23.6	-	24.1	-	24.7	25.3	25.9	-	-	-
22.5	22.9	-	23.2	-	23.7	-	24.2	-	24.8	25.4	26.0	-	-	-
22.6	23.0	-	23.3	-	23.8	-	24.3	-						

APRIL 1959

63

110

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TABLE 66

SWEEPER 12 °MC TO 17.0 °MC IN 1 MINUTE *

MARCH 4 1954

7

FEBRUARY 29, 1929

—LITERATURE. 1954

MILAN T. L. 17

TIME 15, CCE

244

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TABLE 73

SWEET 1 o'clock MC TO 17 o'clock IN 1 MINUTE • JANUARY 1945

JANUARY • 1974

74

74

9

P. I. S. M. N. U. L. E. S. : M. A. N. A. K.

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REVERSE DRAIN • 4-7-30

BOMBAY, INDIA 119*ON, T 2 * 50c

BOMBAY, INDIA 119*ON, T 2 * 50c

86

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SWEET 145 MC 12 18-0 MC 145 MINUTES • MANUA

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卷之三

202

SWEET HONEY TO 2500 MC IN 5 MINUTES! AUTOMATIC

W&L 11

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JULY 2 1958

SMEP 1.6 M TO 160 MC IN 5 MULTISCALE JULY 4, 1975

MURKIN

TABLE 5

DWEEP 1.5 MC TO 18.0 MC IN 5 MINUTES. MANNAUR

654

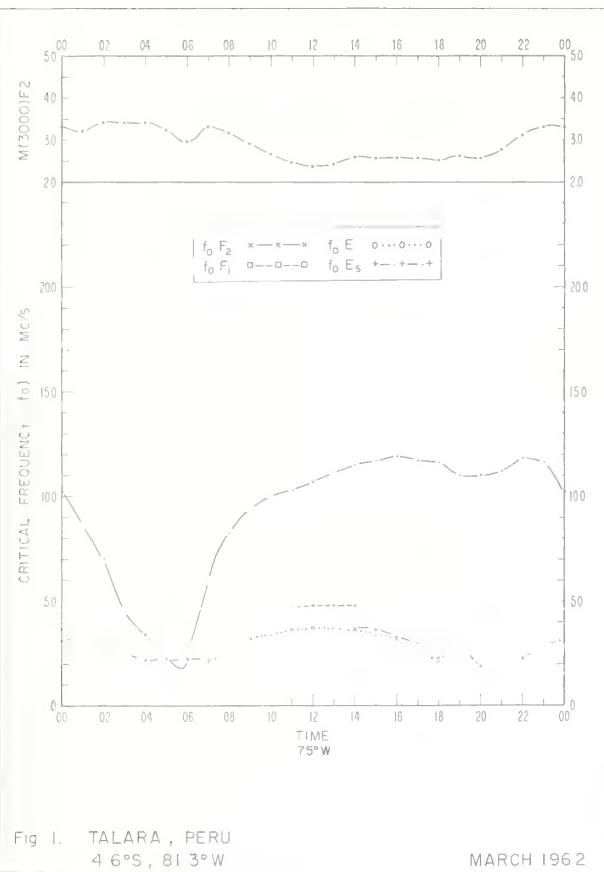
July 1972

SWEET 0-6 MC TO 25+0 MC IN 5 MINUTES: AUTOMATIC

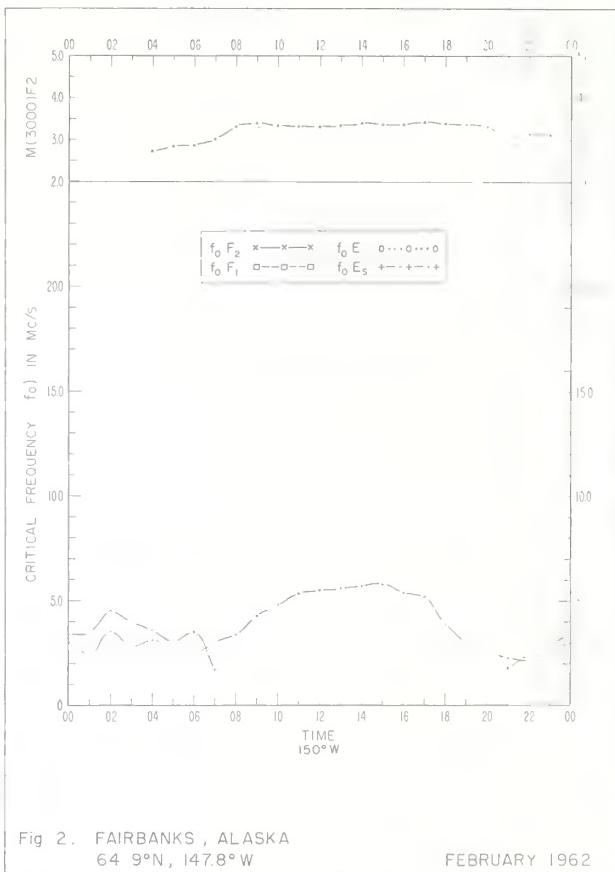
May 1928

۱۰۰

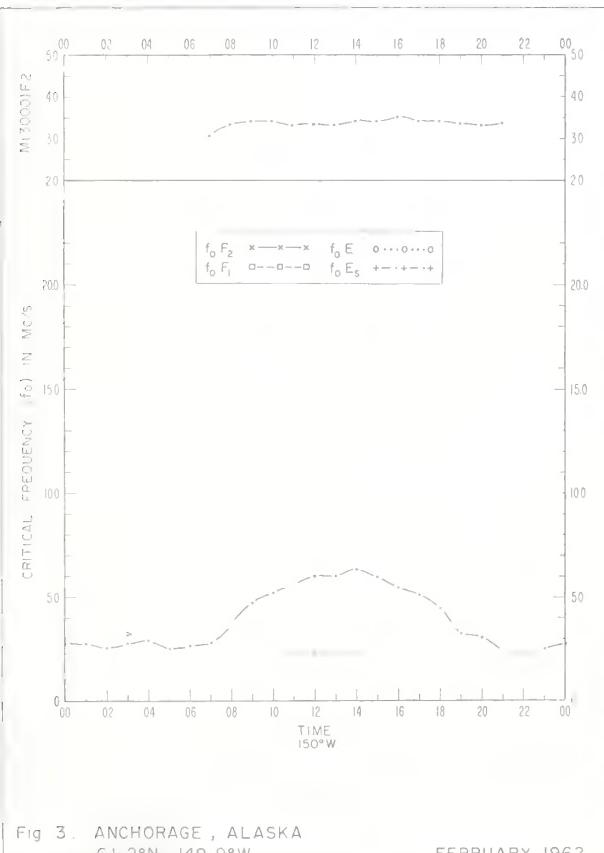
• 5 JNC 145 • 2

Fig. 1. TALARA, PERU
46°S, 81.3°W

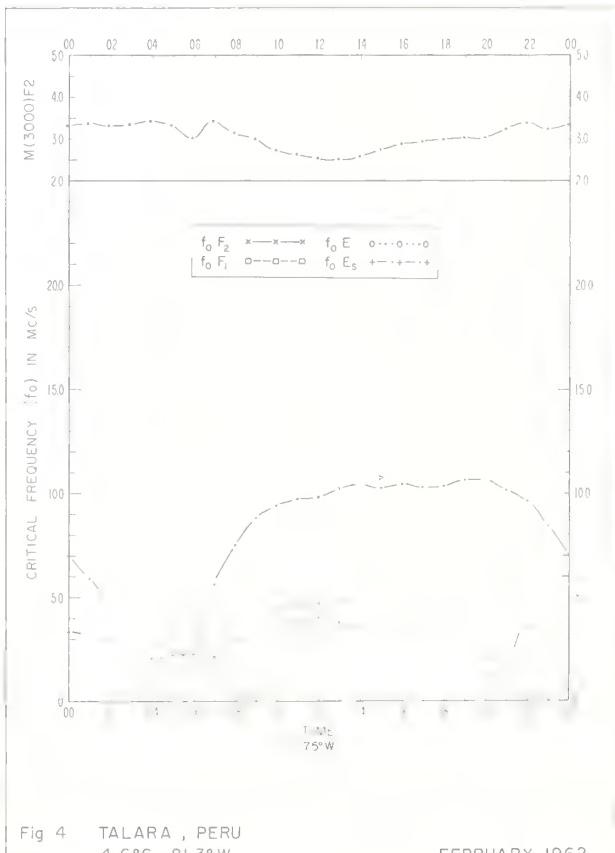
MARCH 1962

Fig. 2. FAIRBANKS, ALASKA
64.9°N, 147.8°W

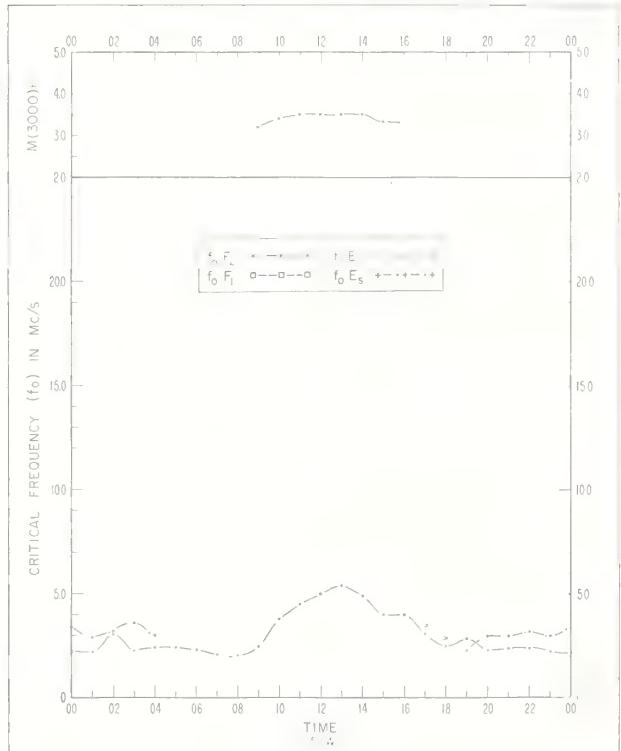
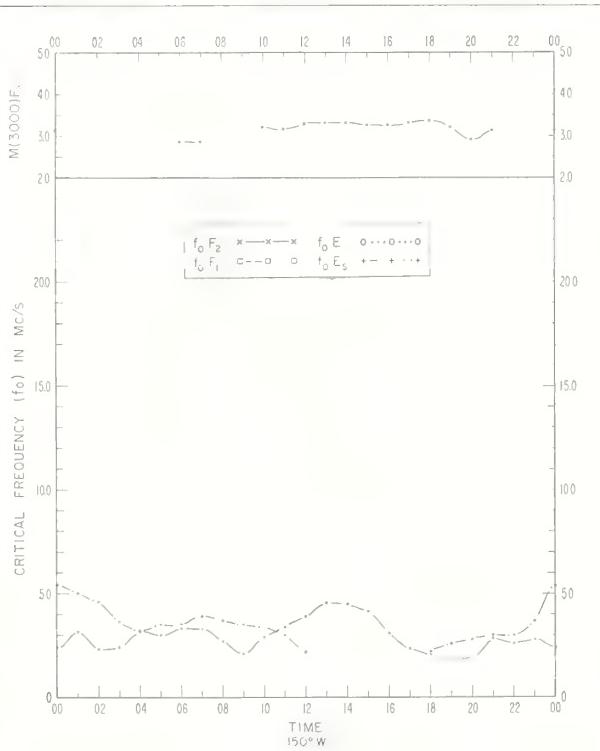
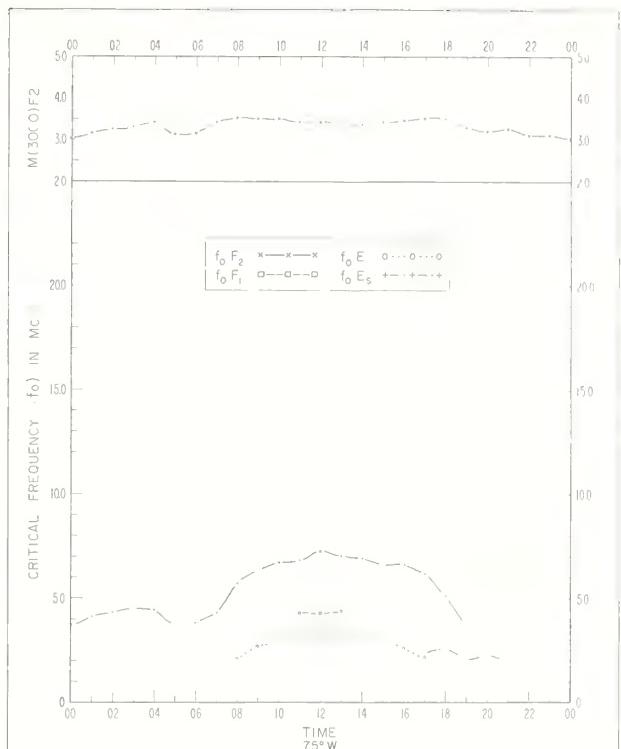
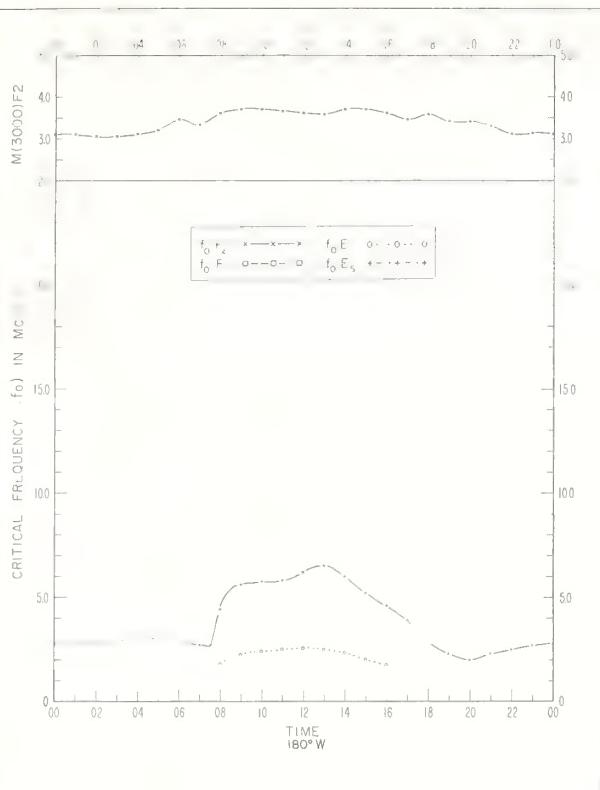
FEBRUARY 1962

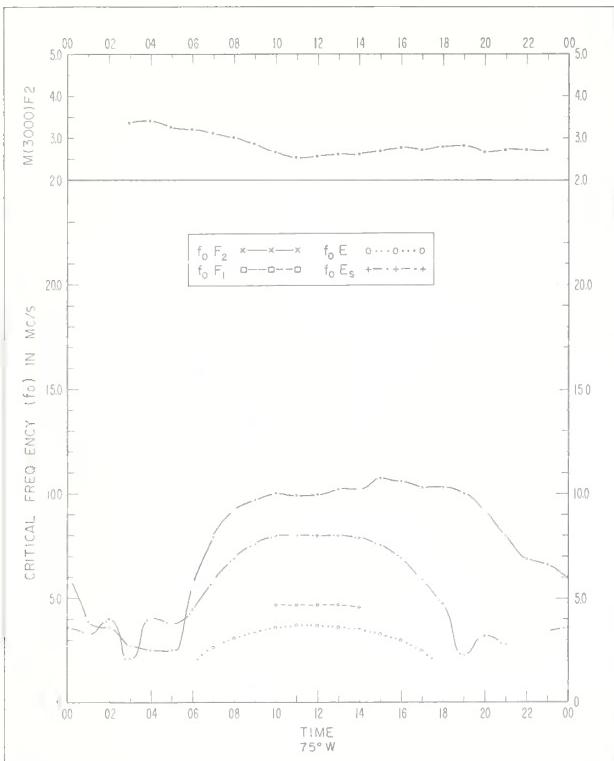
Fig. 3. ANCHORAGE, ALASKA
61.2°N, 149.9°W

FEBRUARY 1962

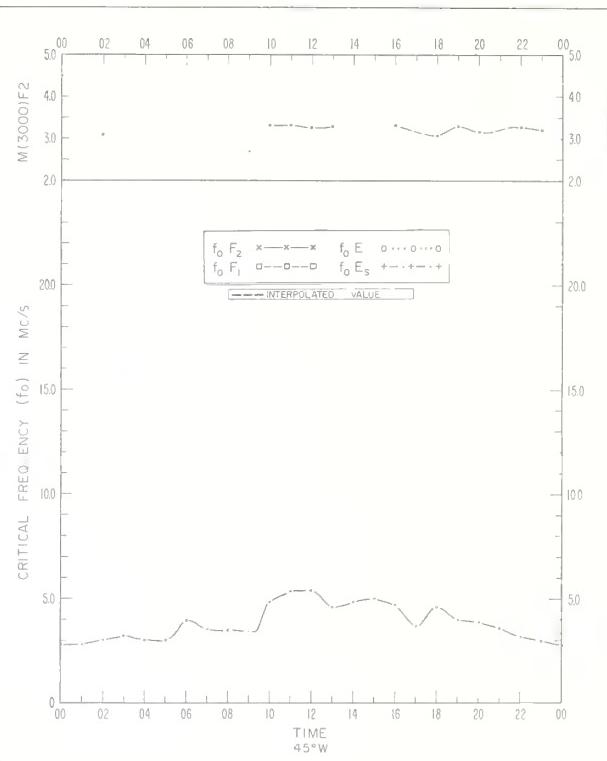
Fig. 4. TALARA, PERU
46°S, 81.3°W

FEBRUARY 1962

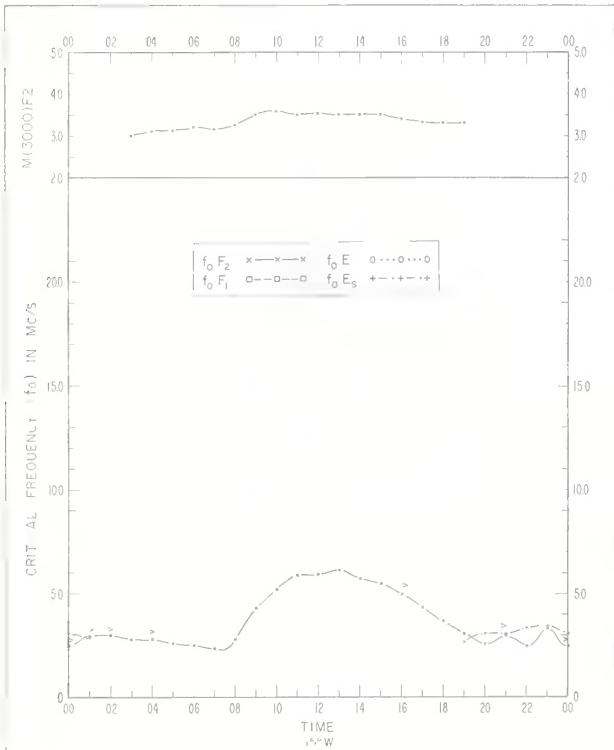


Fig. 9. HUANCAYO, PERU
12.0°S, 75.3°W

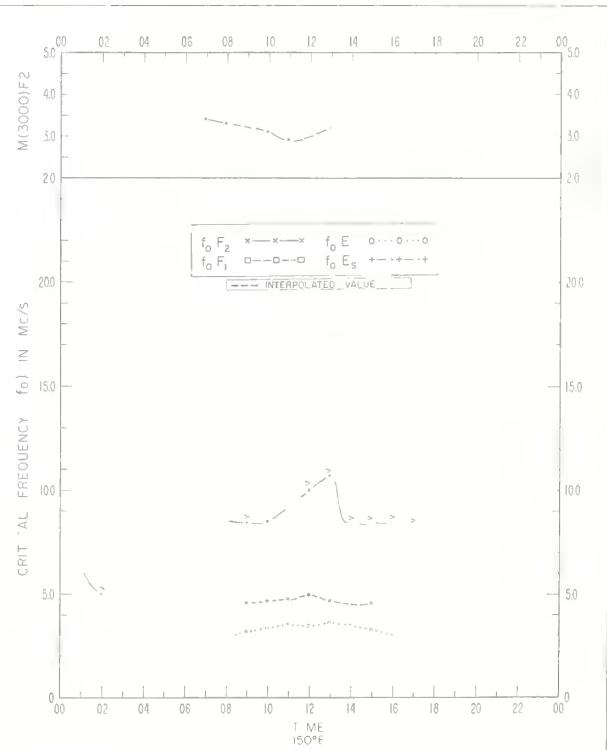
DECEMBER 1961

Fig. 10. GODHAVN, GREENLAND
69.3°N, 53.5°W

NOVEMBER 1961

Fig. 11. REYKJAVIK, ICELAND
64.1°N, 21.8°W

NOVEMBER 1961

Fig. 12. TOWNSVILLE, AUSTRALIA
19.3°S, 146.7°E

OCTOBER 1961

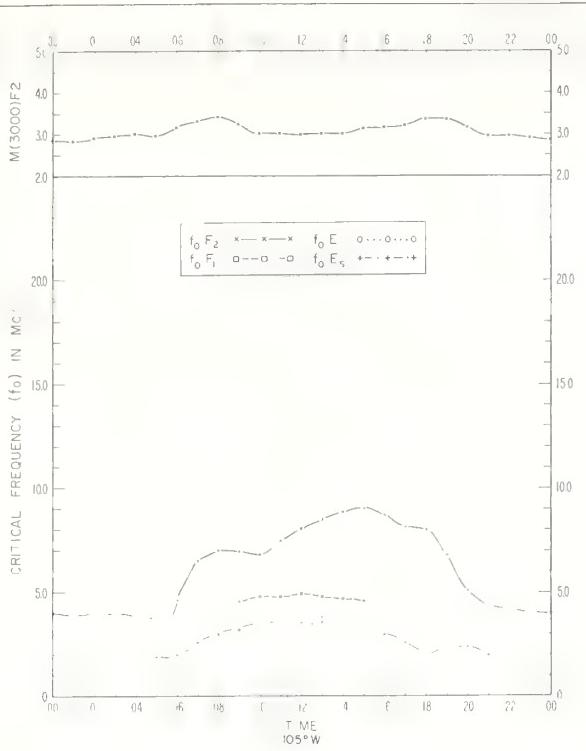


Fig. 13. WHITE SANDS , NEW MEXICO
32 3°N, 106 5°W SEPTEMBER 1961

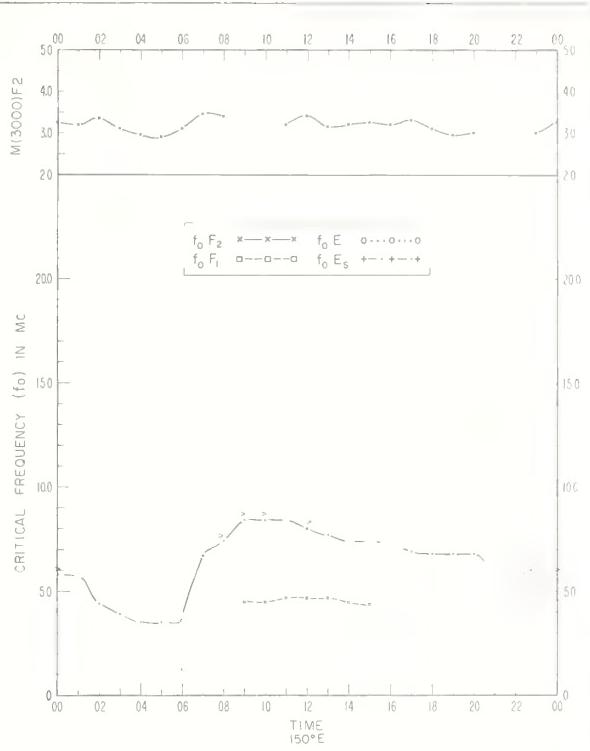


Fig. 14. TOWNSVILLE , AUSTRALIA
19.3°S, 146 7°E SEPTEMBER 1961

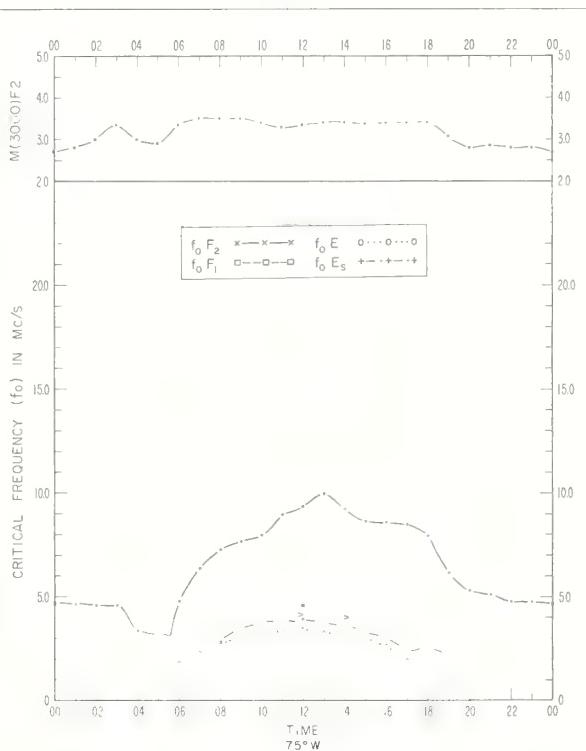


Fig. 15. CONCEPCION , CHILE
36.6°S, 73.0°W SEPTEMBER 1961

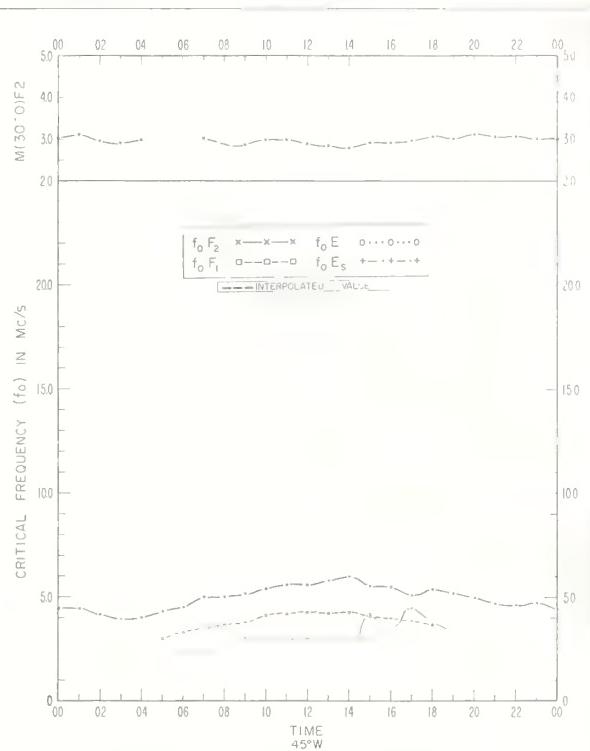
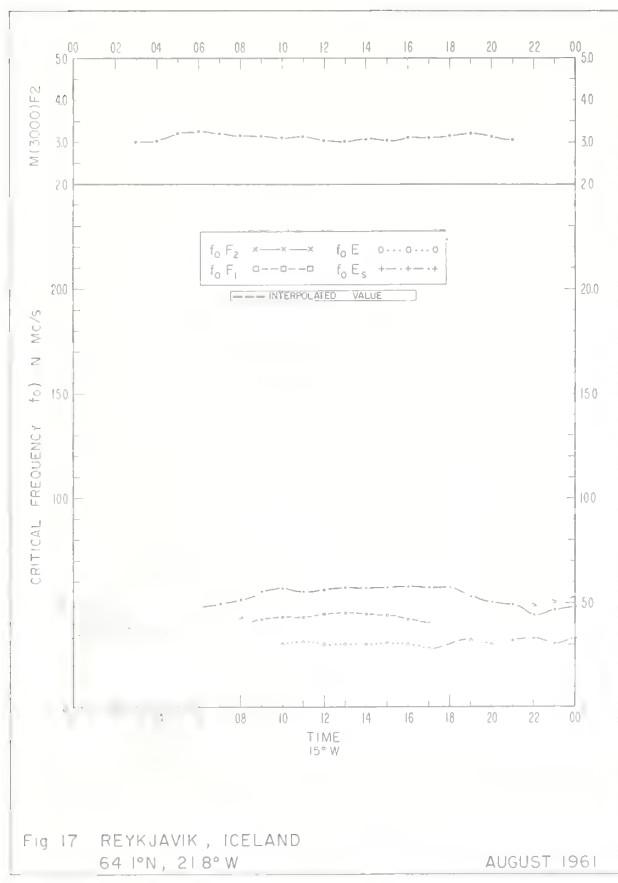
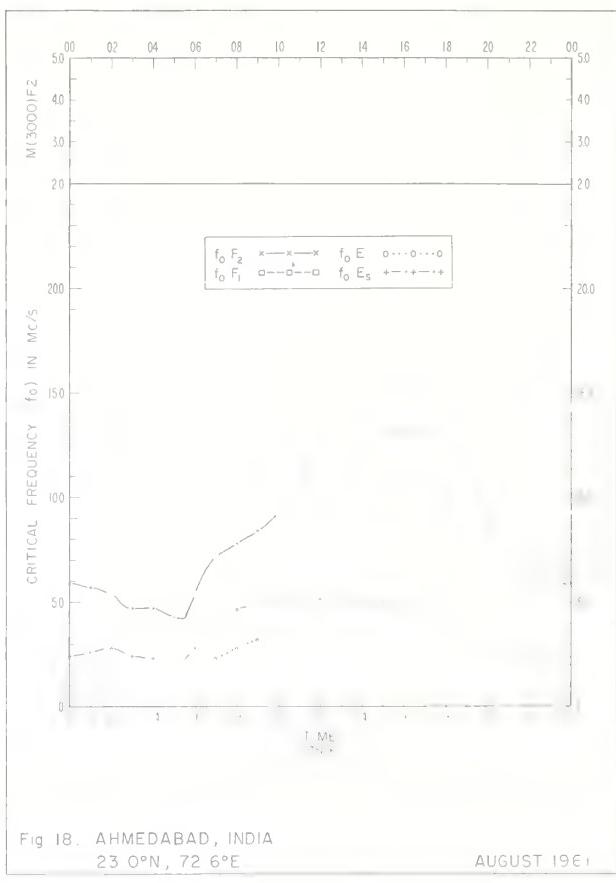


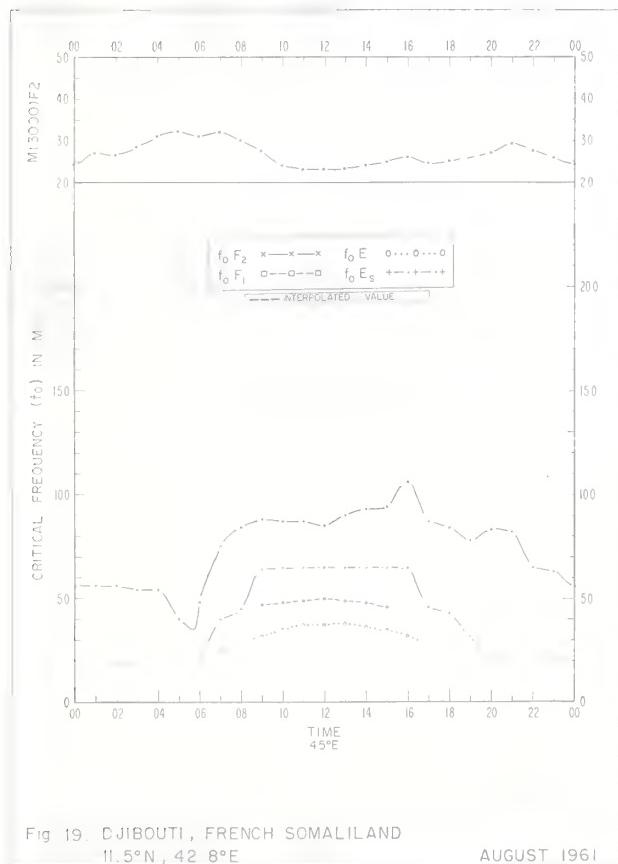
Fig. 16. GODHAVN , GREENLAND
69.3°N, 53.5°W AUGUST 1961

Fig 17 REYKJAVIK, ICELAND
64°N, 21.8°W

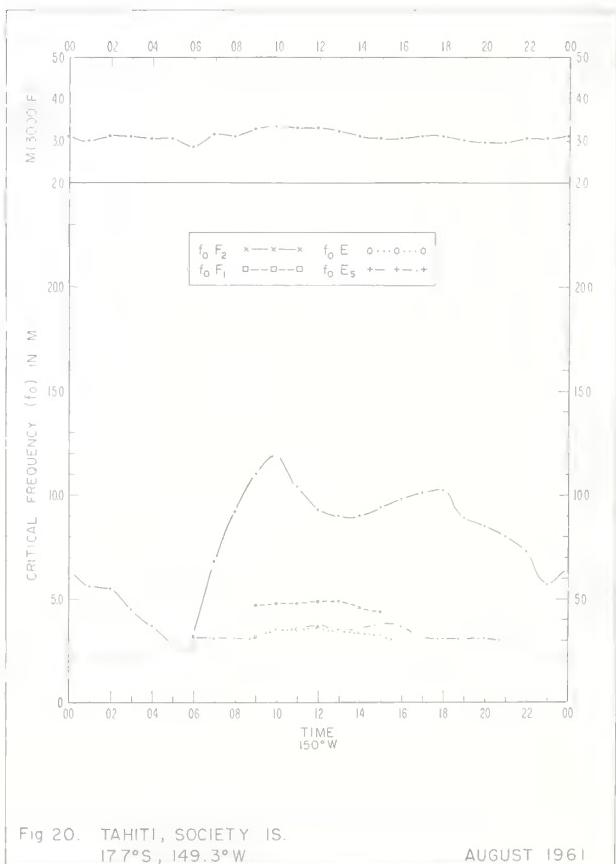
AUGUST 1961

Fig 18. AHMEDABAD, INDIA
23°N, 72.6°E

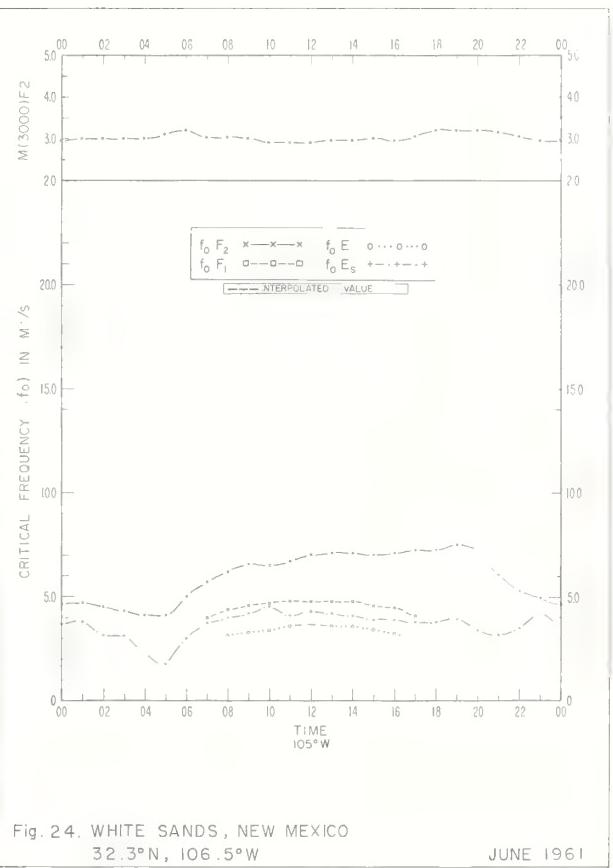
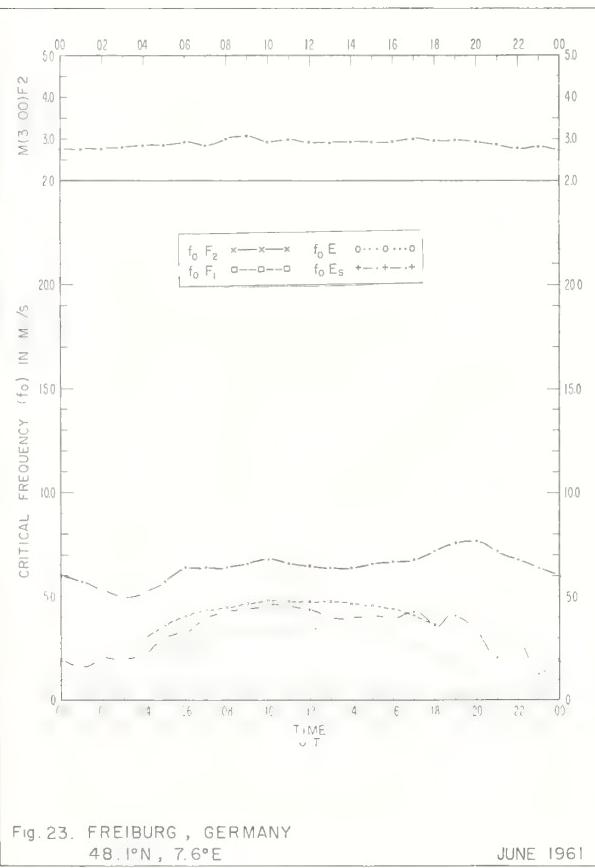
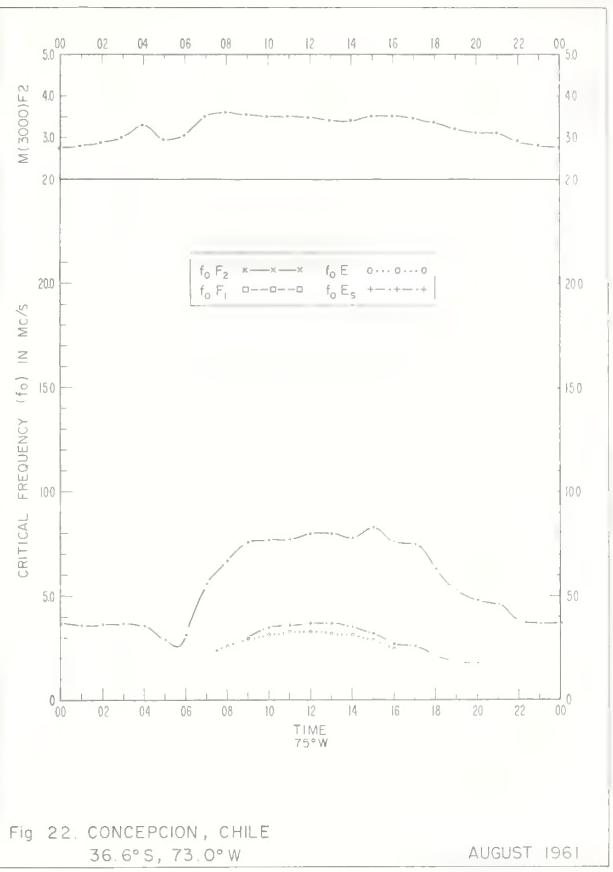
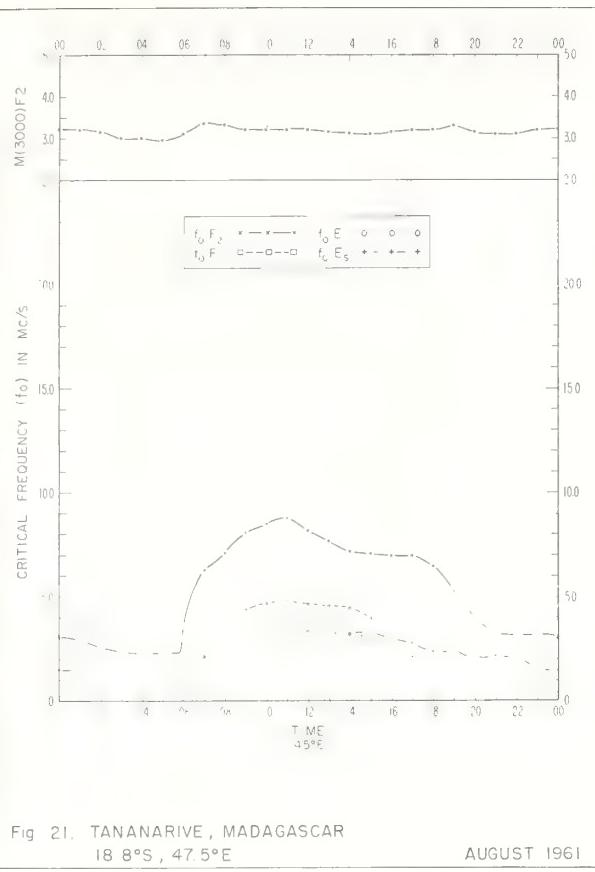
AUGUST 1961

Fig 19. DJIBOUTI, FRENCH SOMALILAND
11.5°N, 42.8°E

AUGUST 1961

Fig 20. TAHITI, SOCIETY IS.
17.7°S, 149.3°W

AUGUST 1961



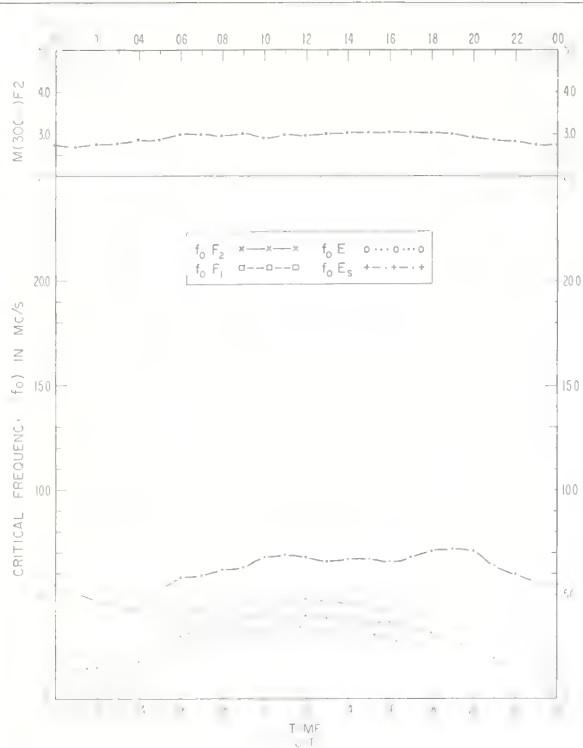


Fig 25. FREIBURG, GERMANY
48 1°N, 7.6°E

MAY 1961

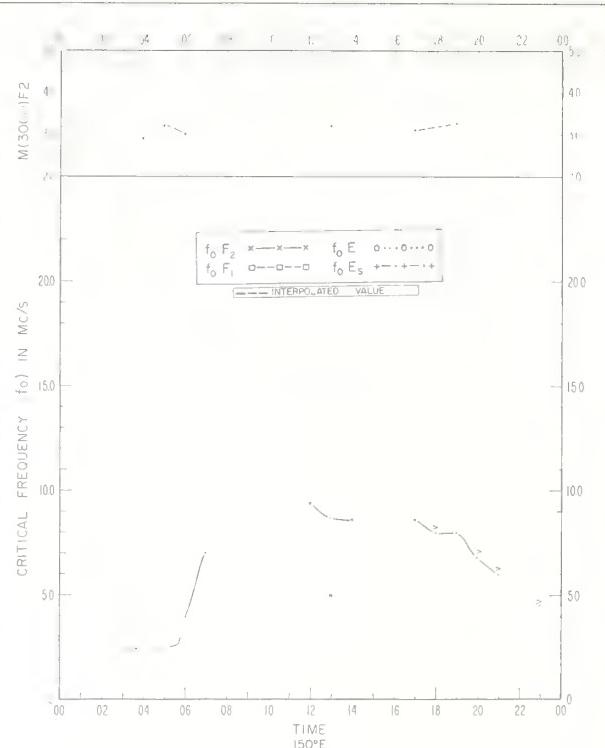


Fig 26. PORT MORESBY
9 4°S, 147 1°E

MAY 1961

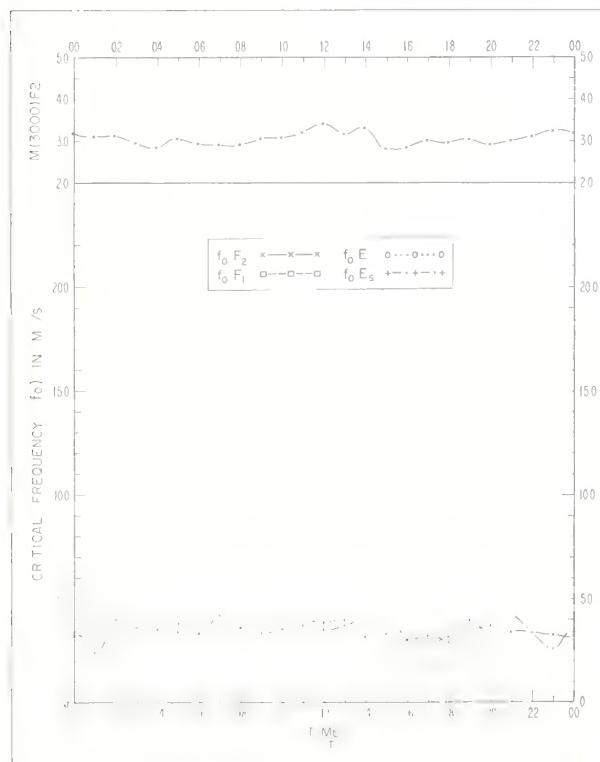


Fig 27 POLE STATION
90 0°S

MAY 1961

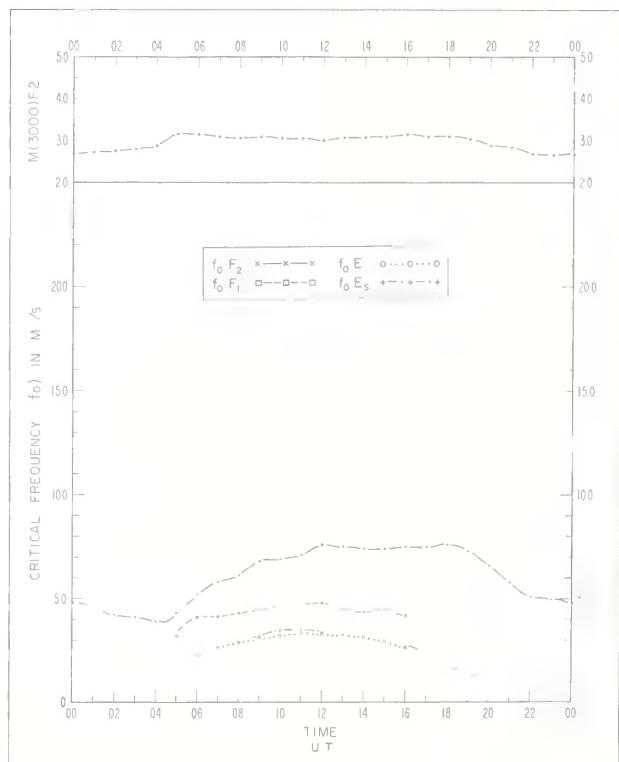


Fig 28. FREIBURG, GERMANY
48 1°N, 7.6°E

APRIL 1961

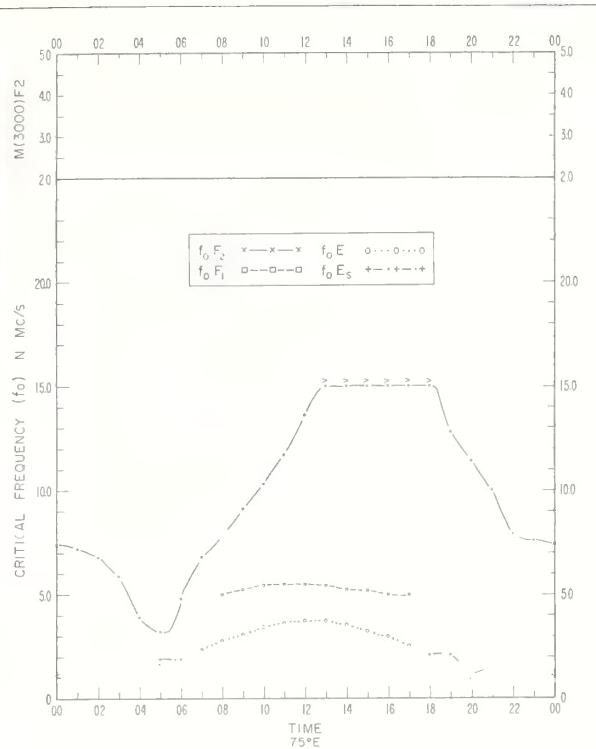


Fig. 29. AHMEDABAD, INDIA
23.0°N, 72.6°E

APRIL 1961

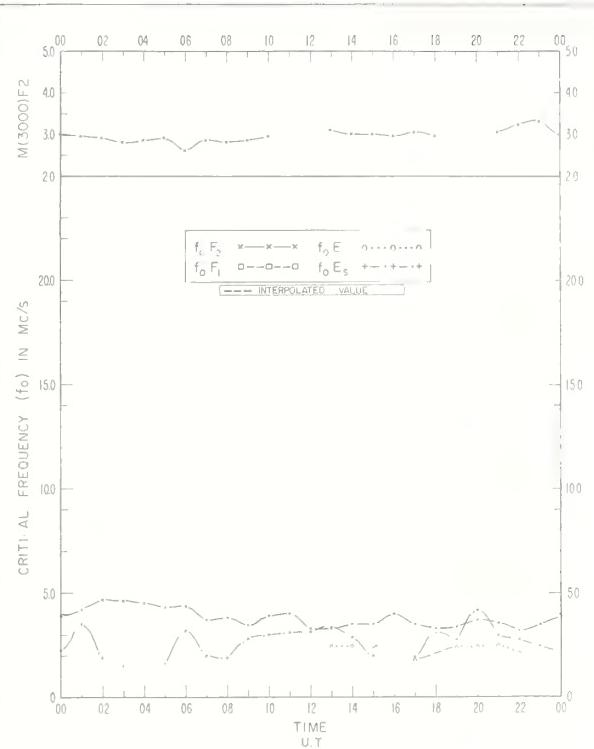


Fig. 30 POLE STATION
90.0°S

APRIL 1961

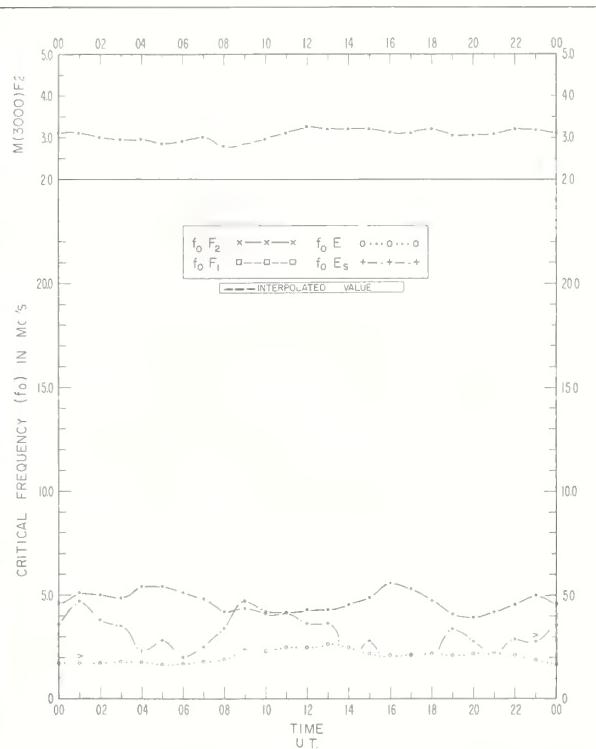


Fig. 31. POLE STATION
90.0°S

MARCH 1961

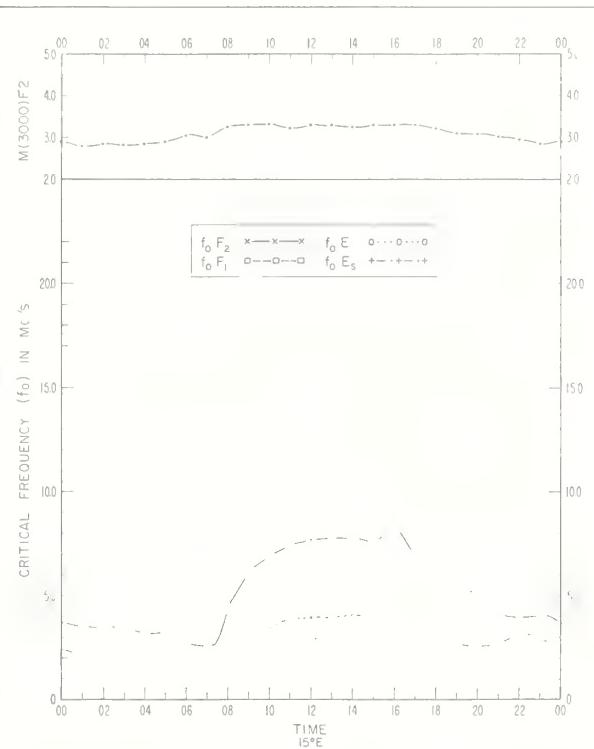
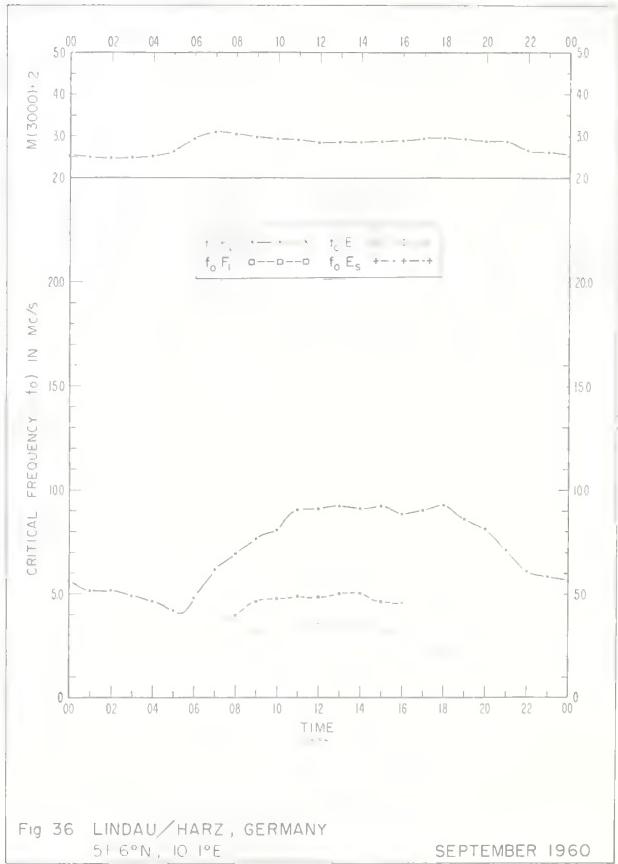
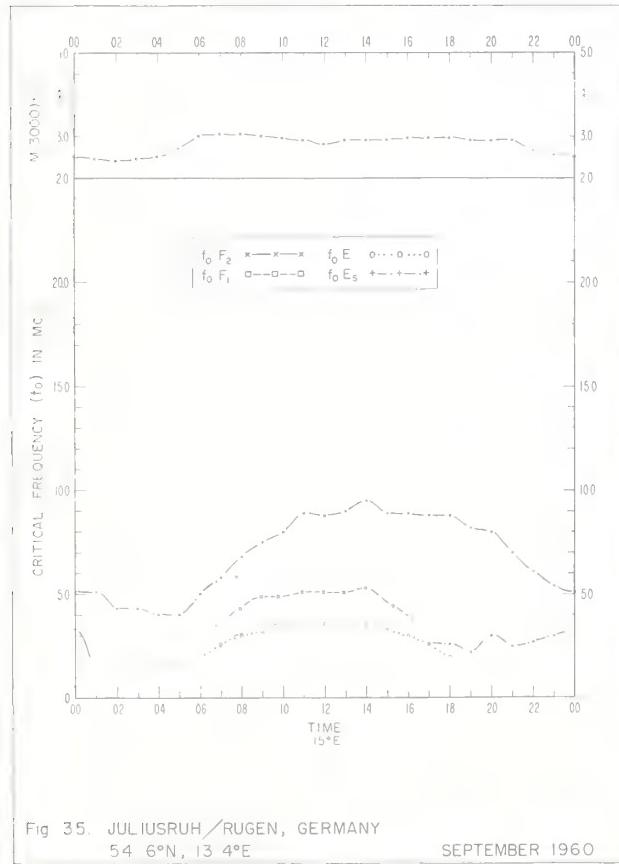
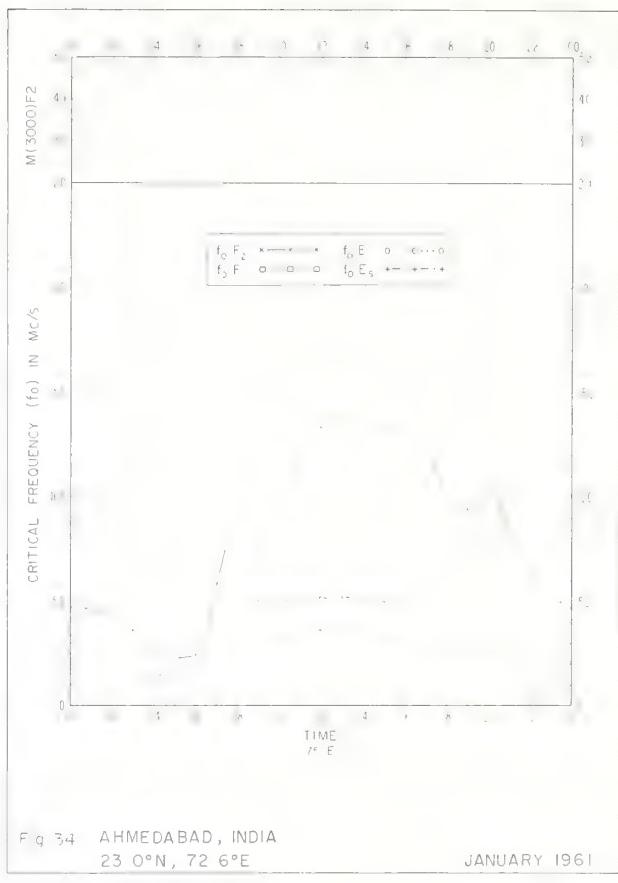
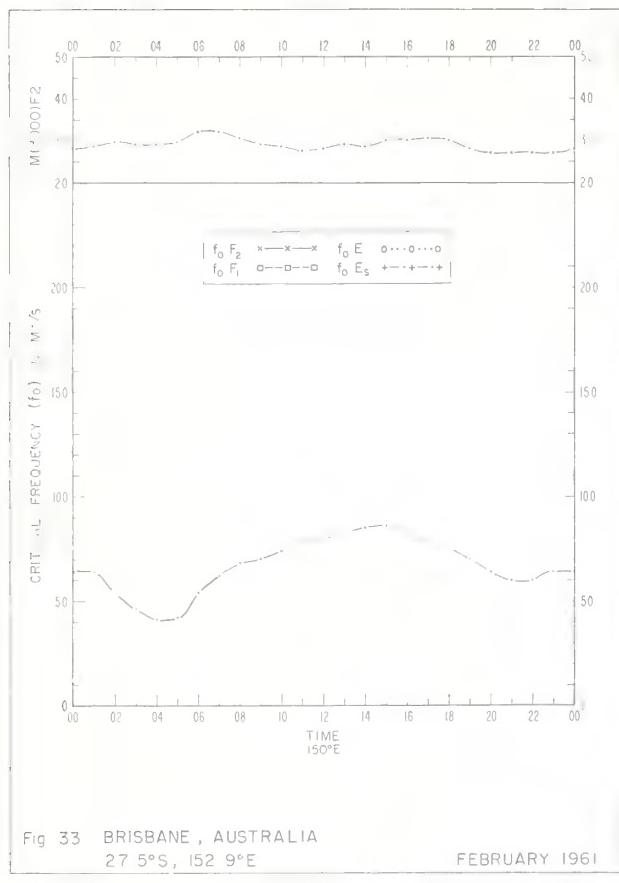


Fig. 32. PARIS, FRANCE
48.1°N, 2.3°E

FEBRUARY 1961



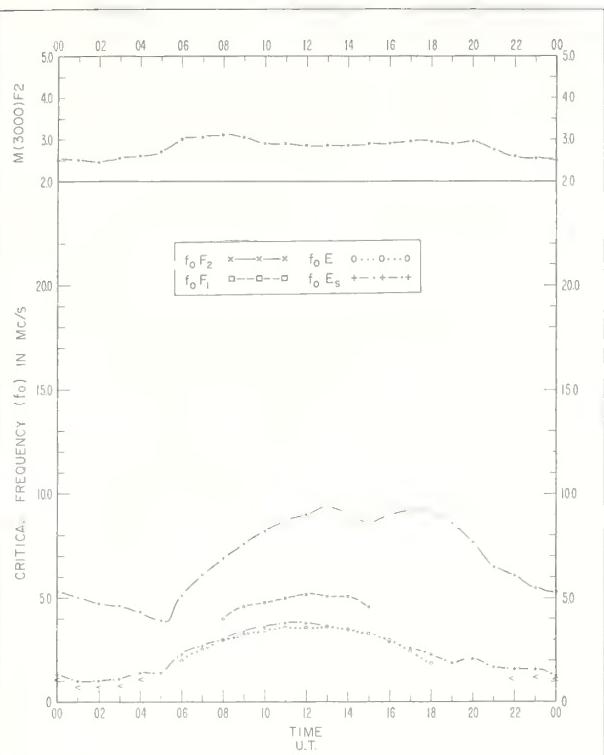


Fig. 37. SLOUGH, ENGLAND
51.5°N, 0.6°W
SEPTEMBER 1960

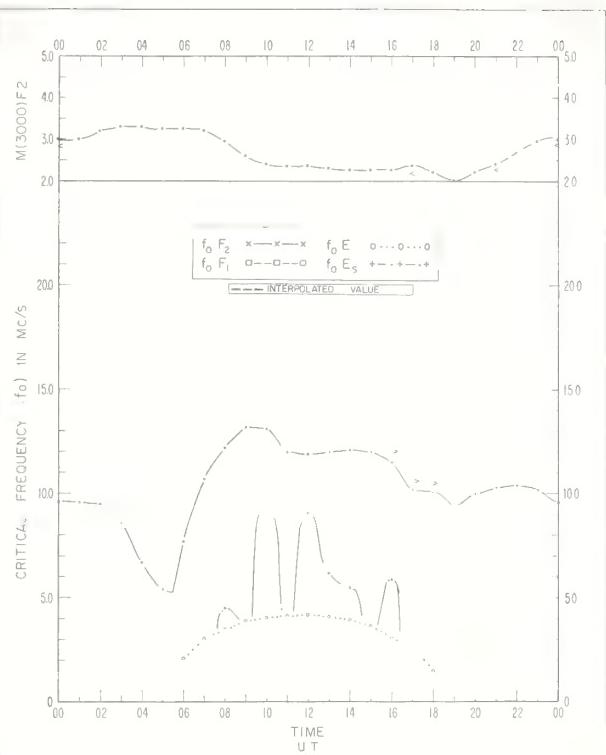


Fig. 38. IBADAN, NIGERIA
7.4°N, 3.9°E
SEPTEMBER 1960

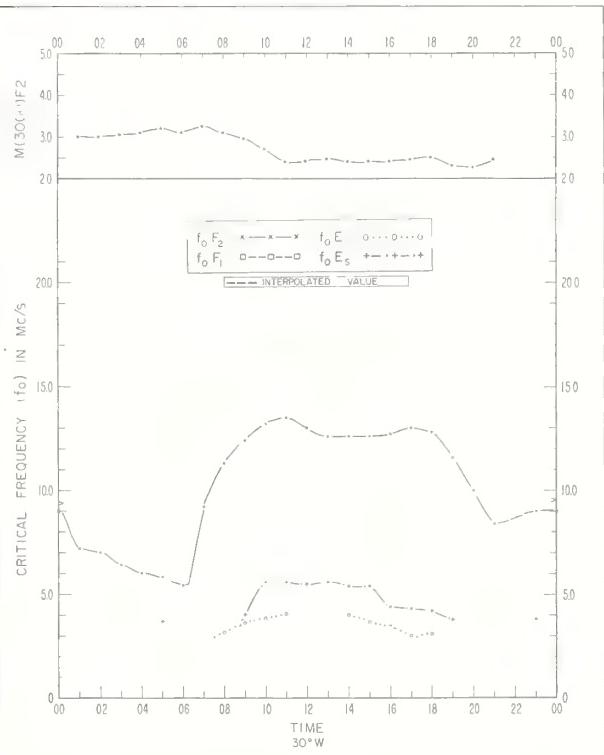


Fig. 39. NATAL, BRAZIL
5.7°S, 35.2°W
SEPTEMBER 1960

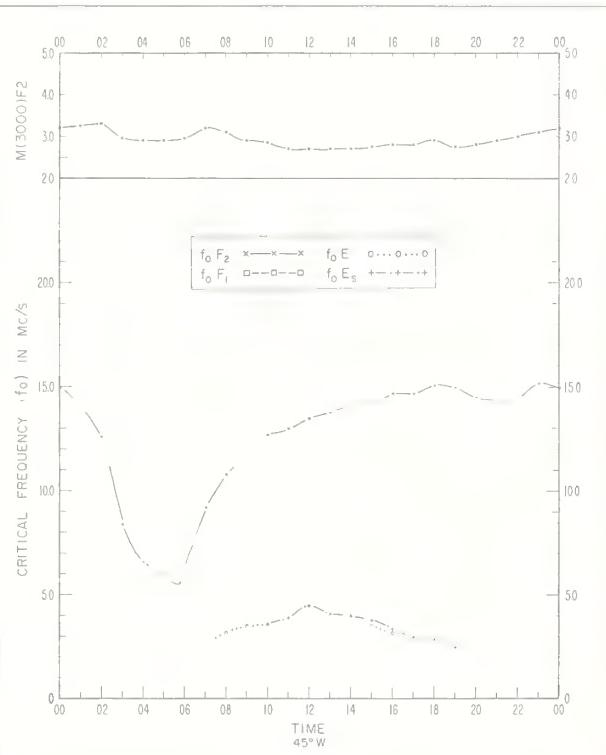
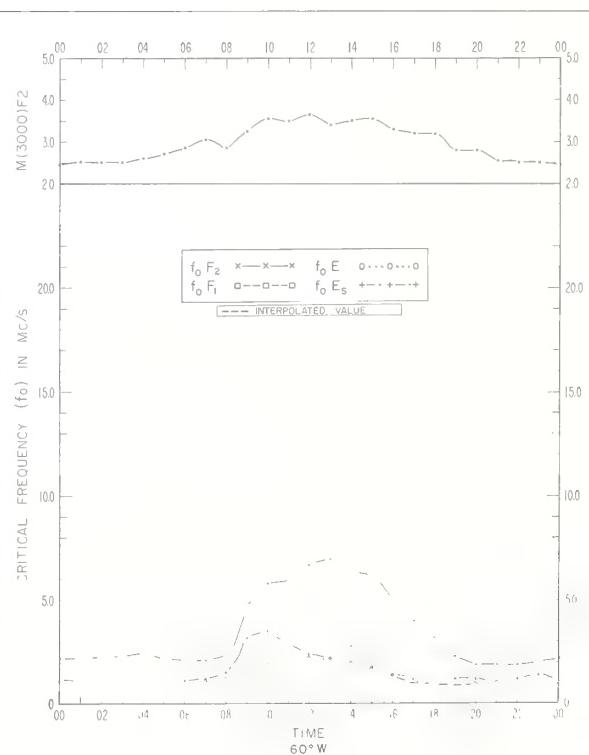
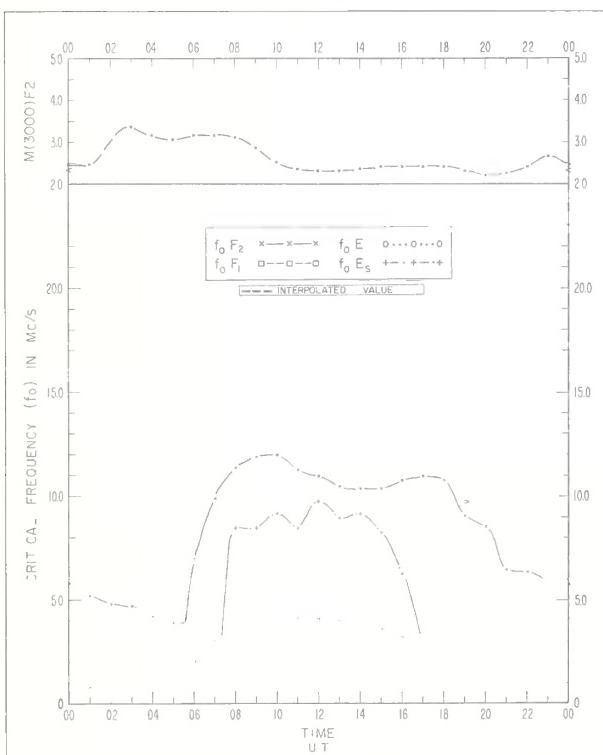
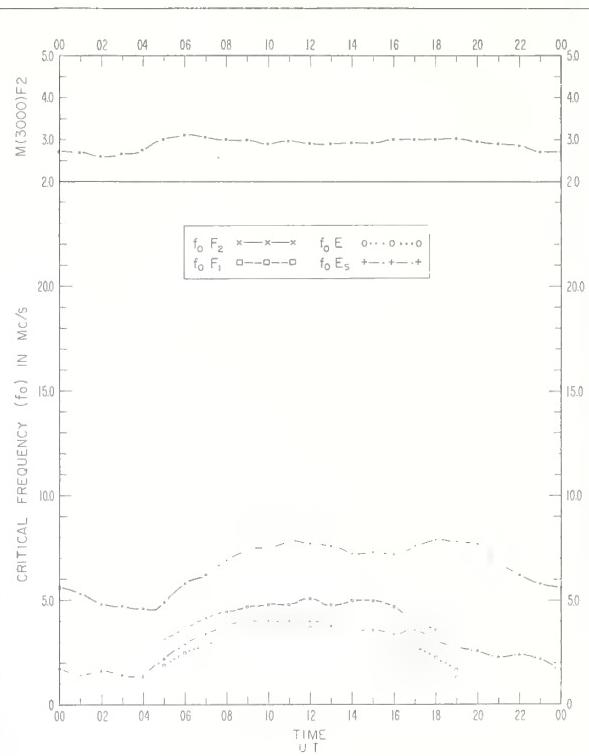
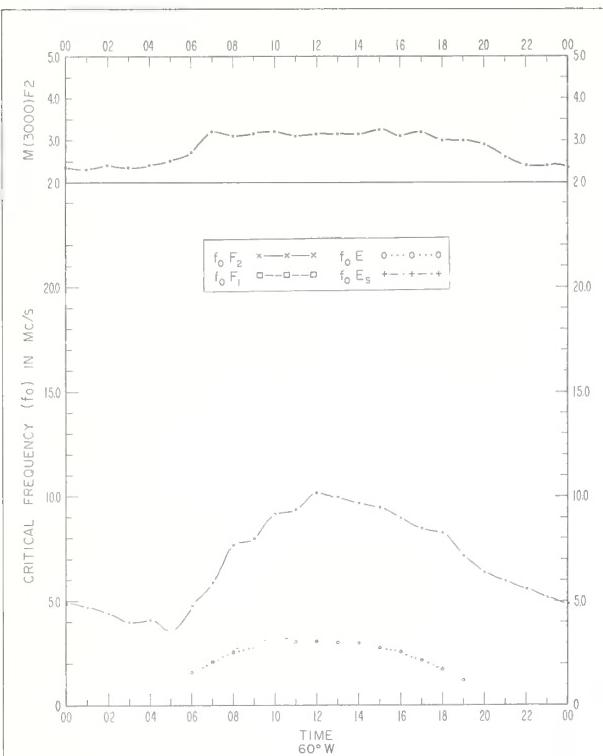
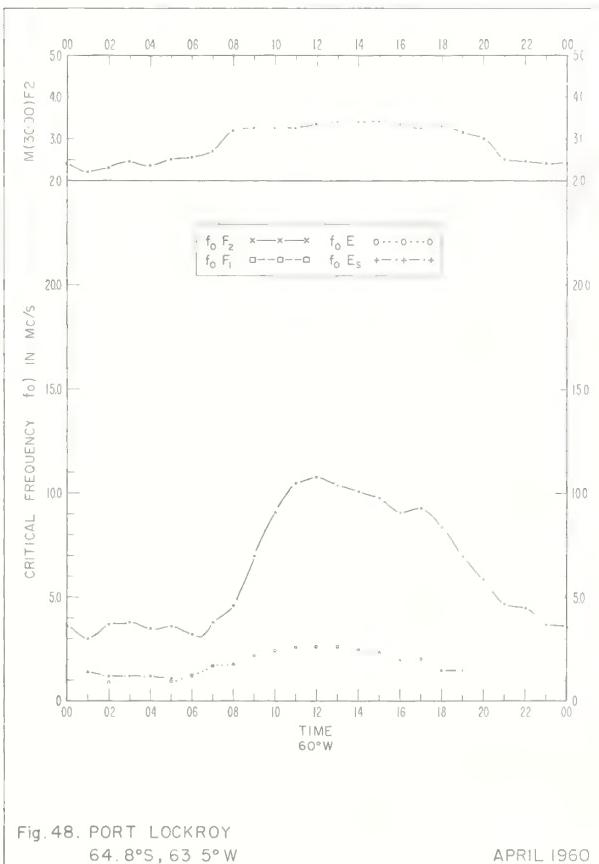
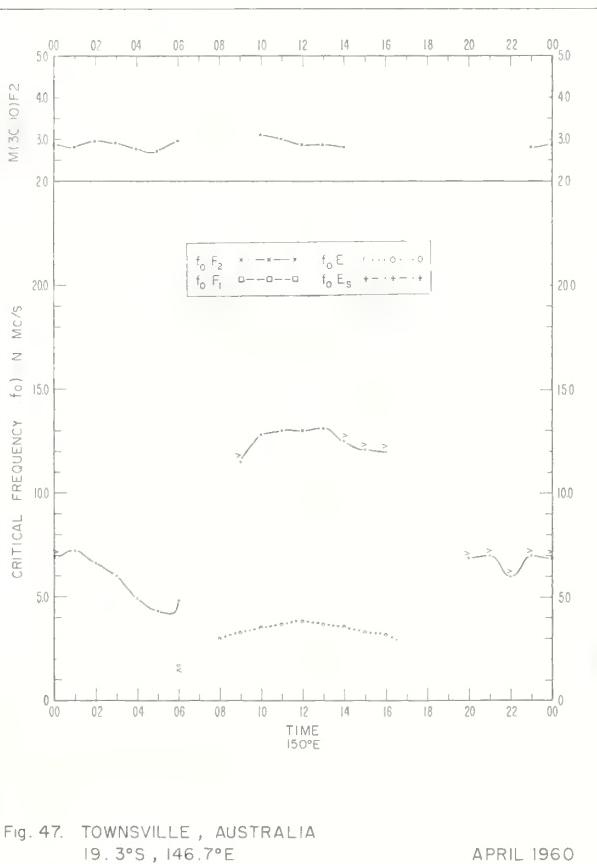
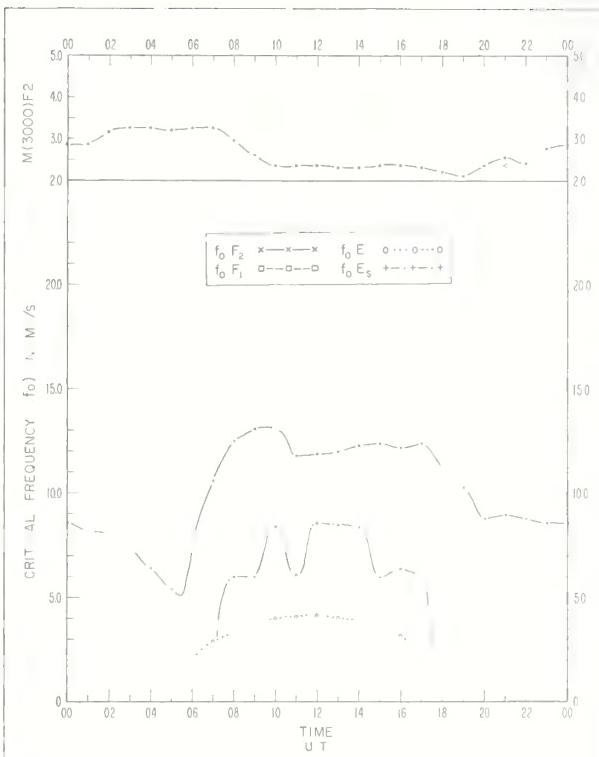
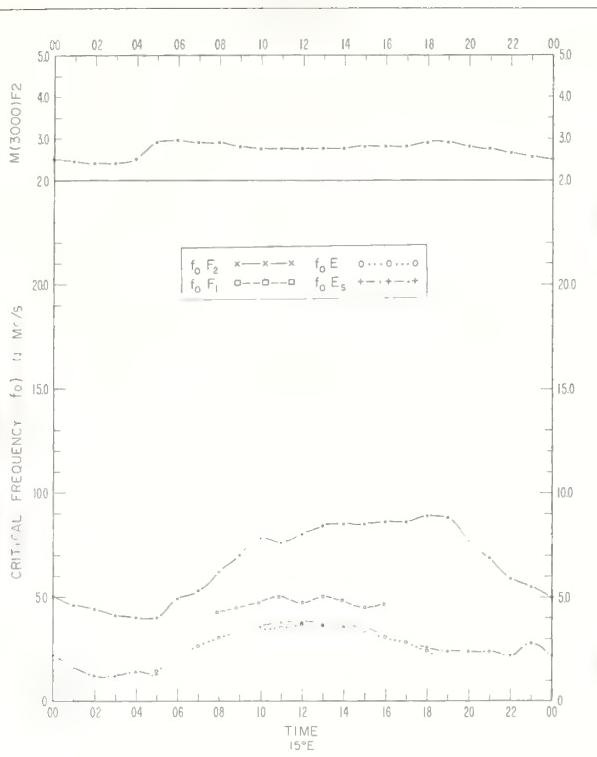


Fig. 40. SAO PAULO, BRAZIL
23.5°S, 46.5°W
SEPTEMBER 1960





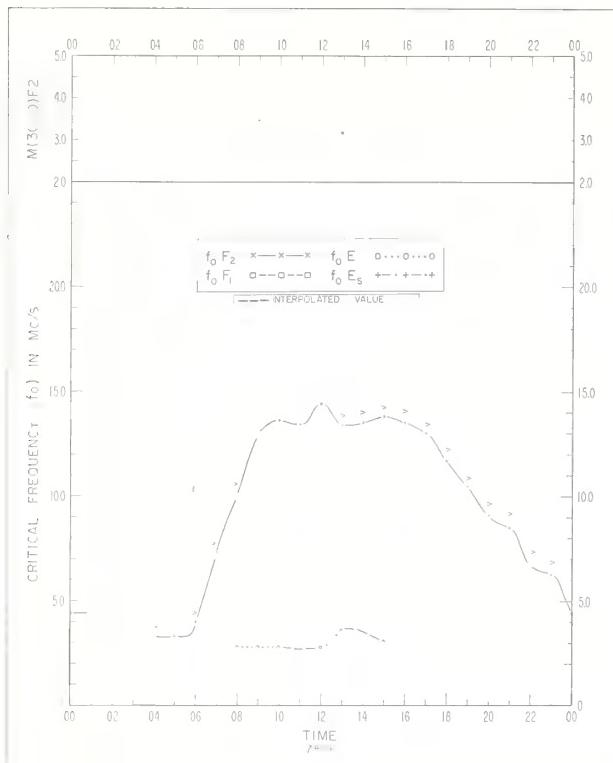


Fig 49 DELHI, INDIA
28° 6'N, 77° 2'E

JANUARY 1960

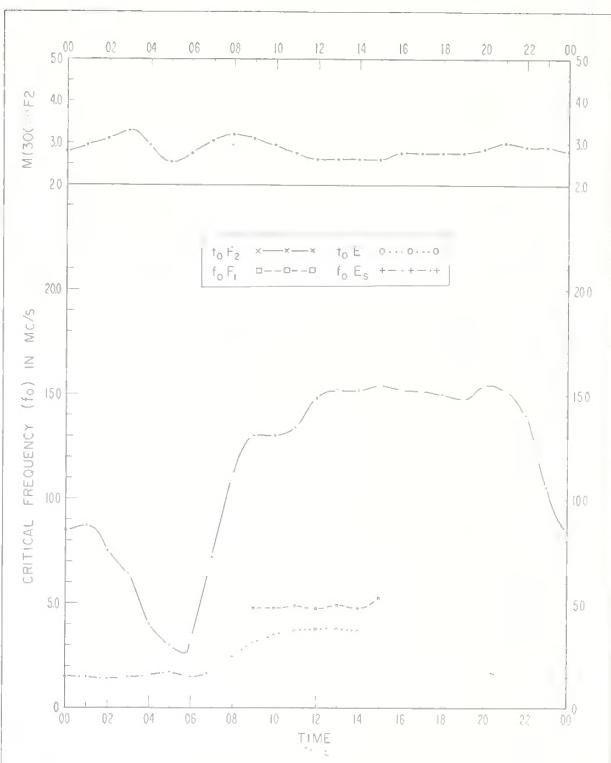


Fig 50. AHMEDABAD, INDIA
23° 0'N, 72° 6'E

JANUARY 1960

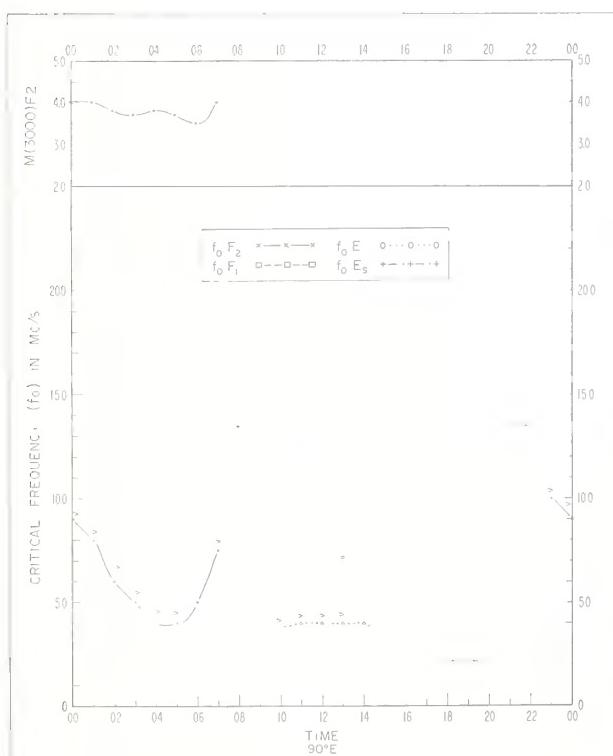


Fig 51. CALCUTTA, INDIA
23° 0'N, 88° 6'E

JANUARY 1960

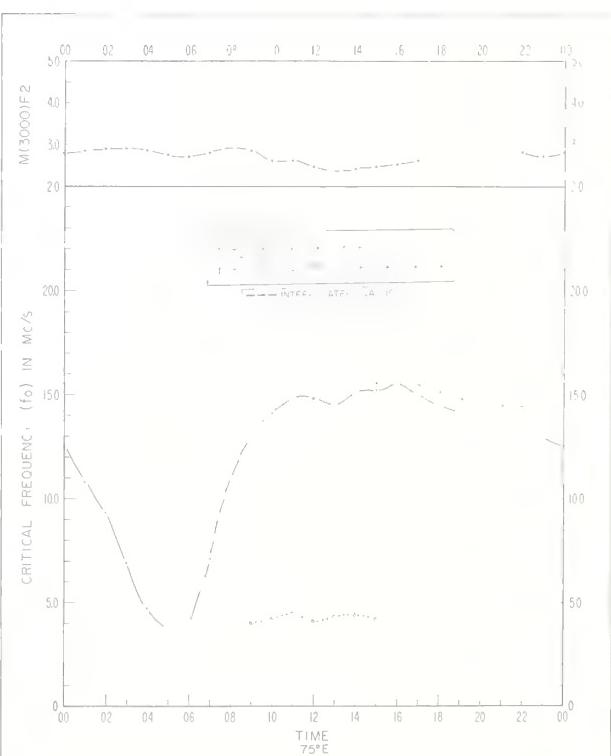


Fig. 52. BOMBAY, INDIA
19° 0'N, 72° 8'E

JANUARY 1960

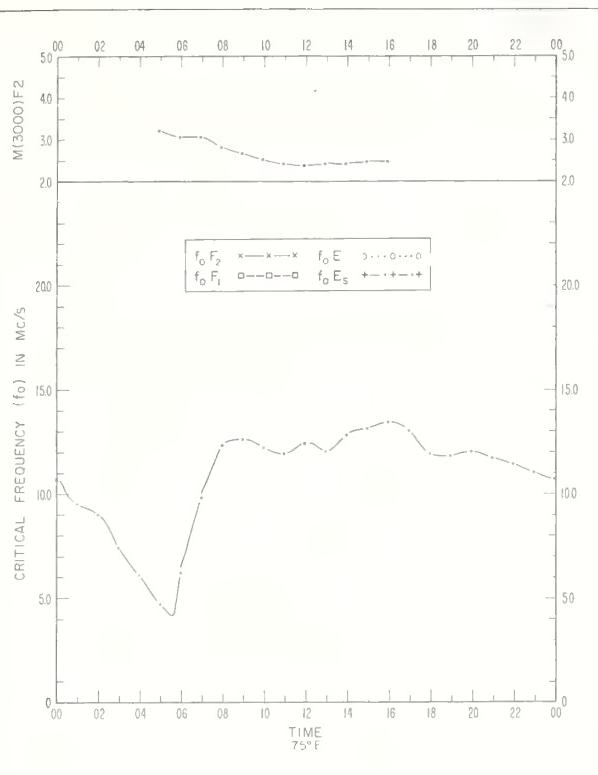


Fig. 53. MADRAS, INDIA
13.1°N, 80.3°E

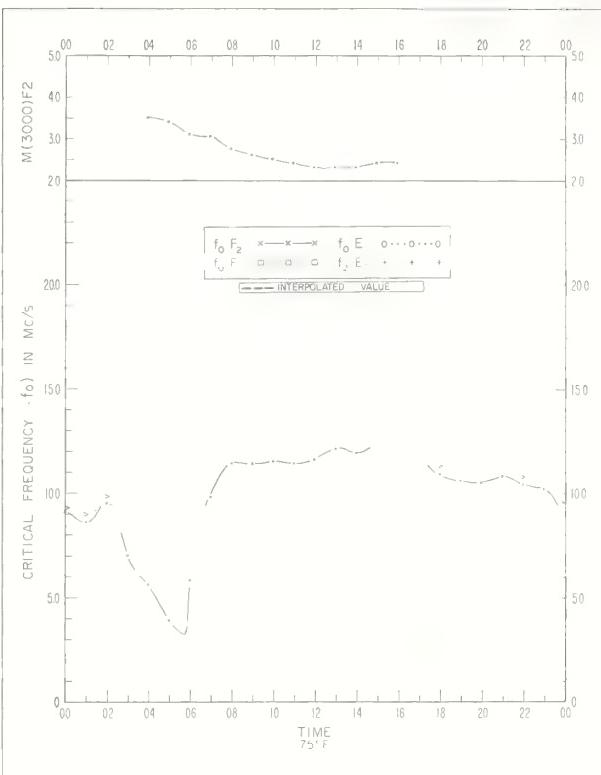


Fig. 54. TIRUCHY, INDIA
10.8°N, 78.7°E

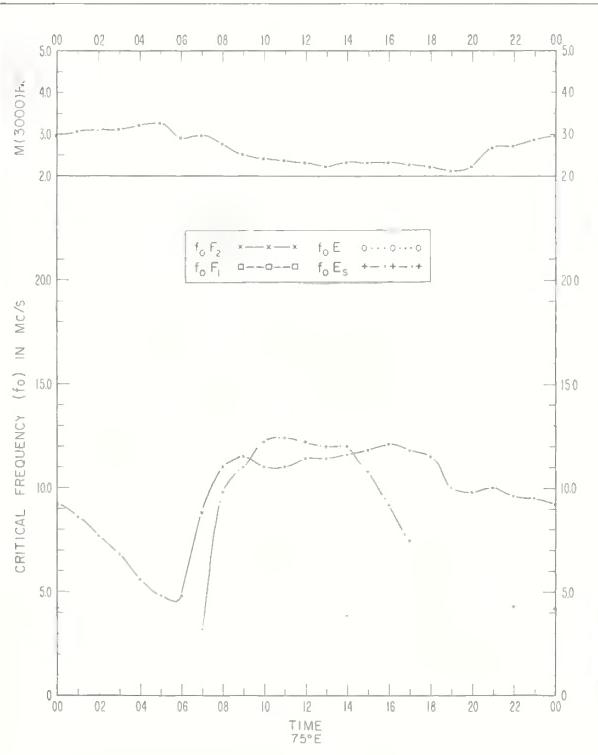


Fig. 55. KODAIKANAL, INDIA
10.2°N, 77.5°E

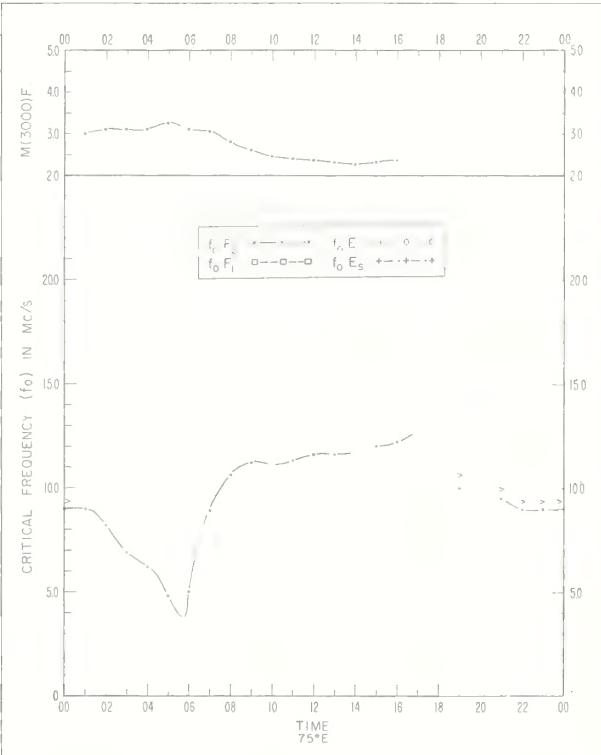
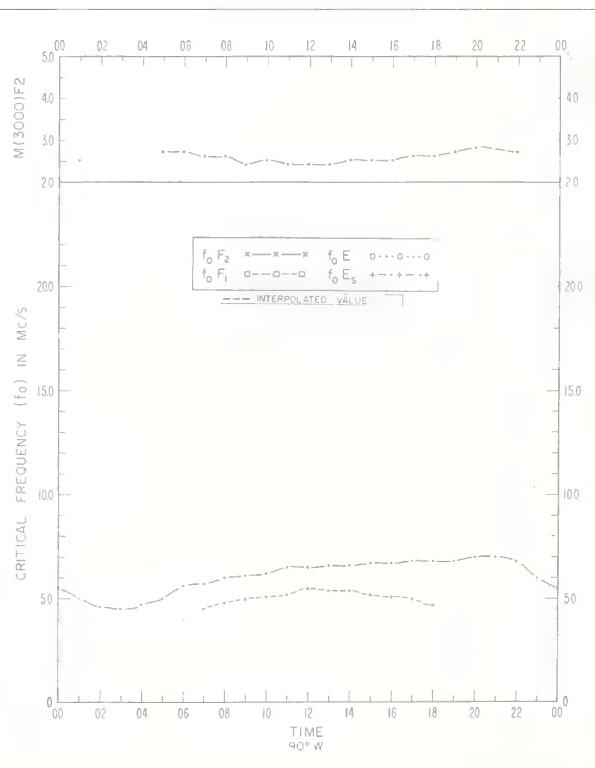
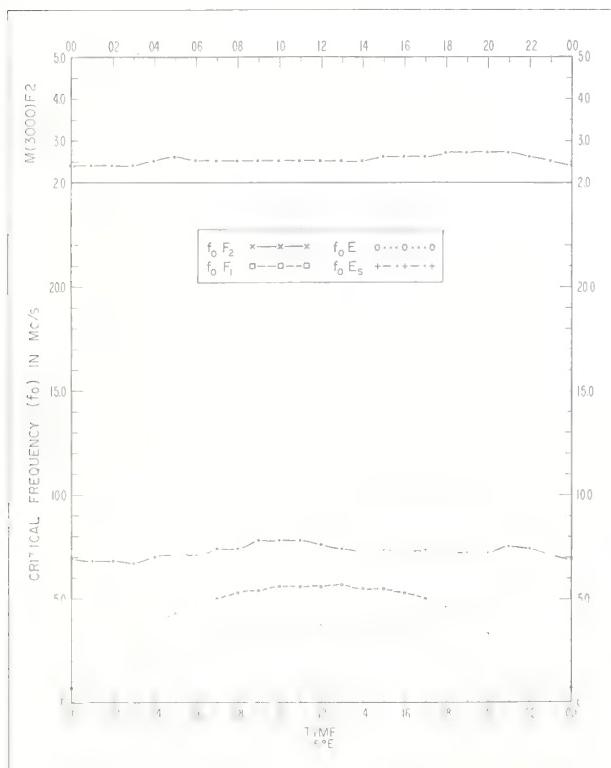
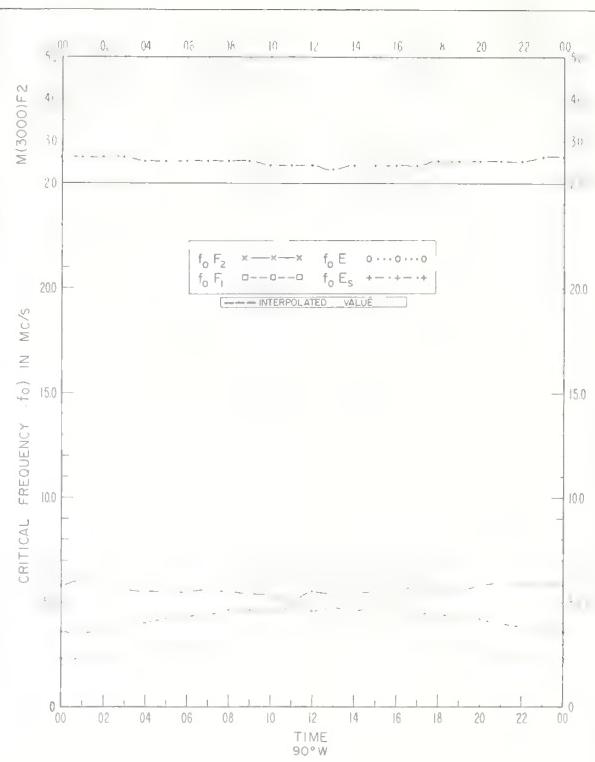
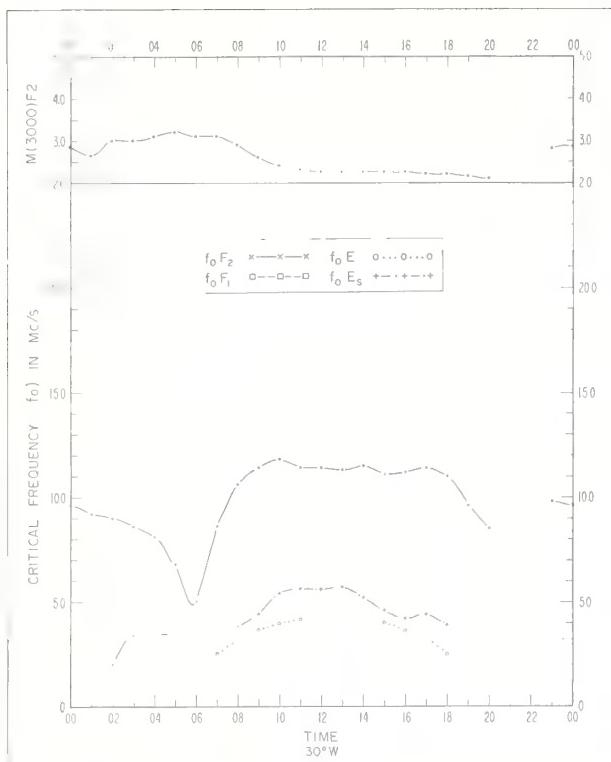
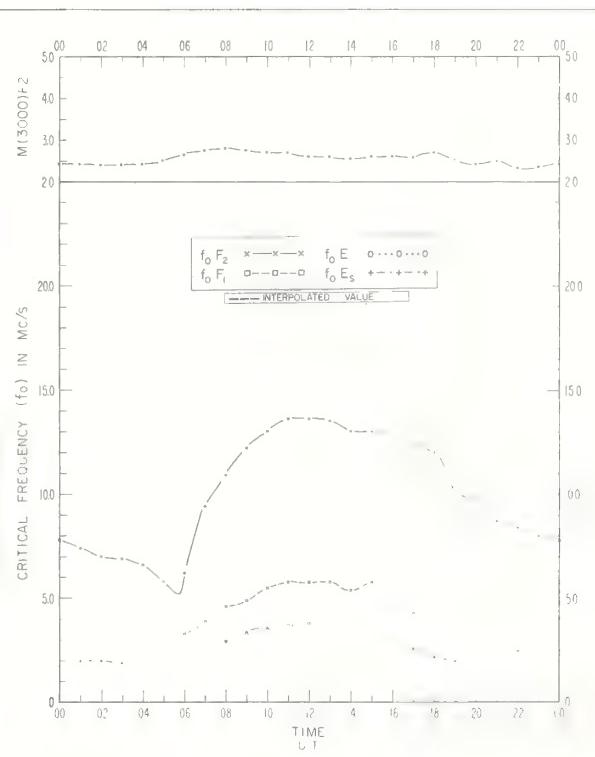
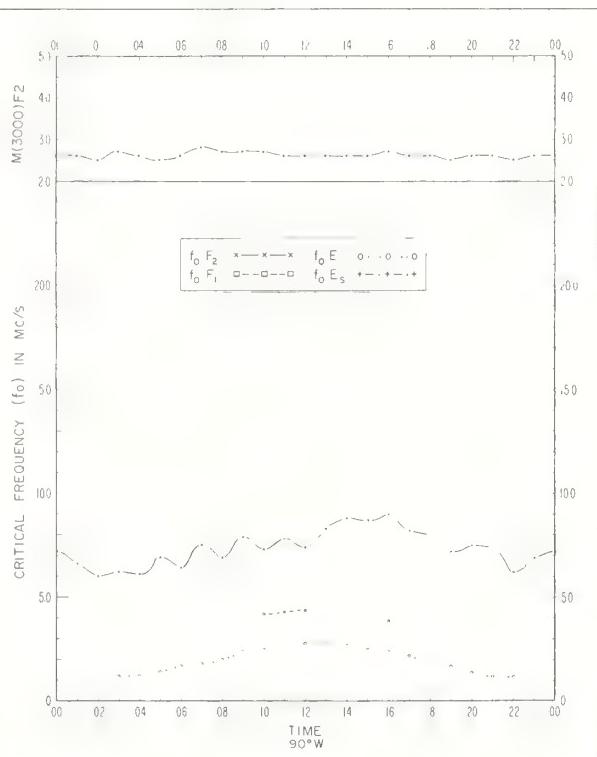
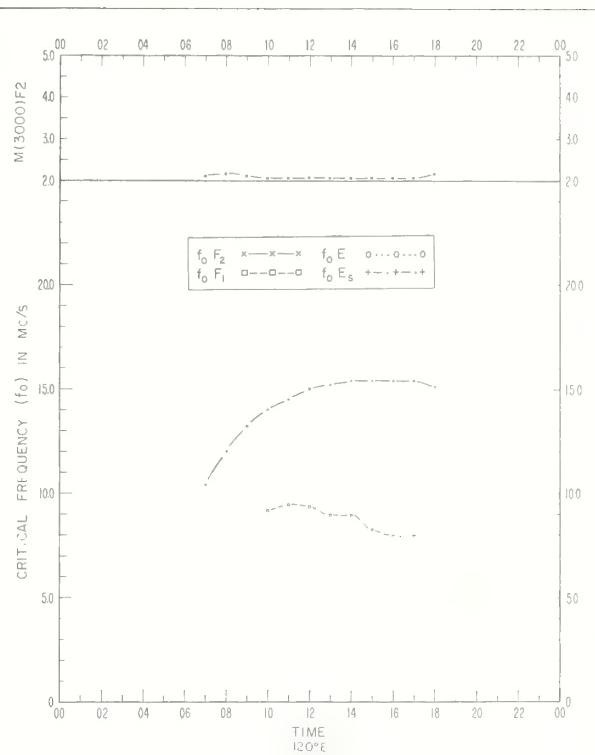
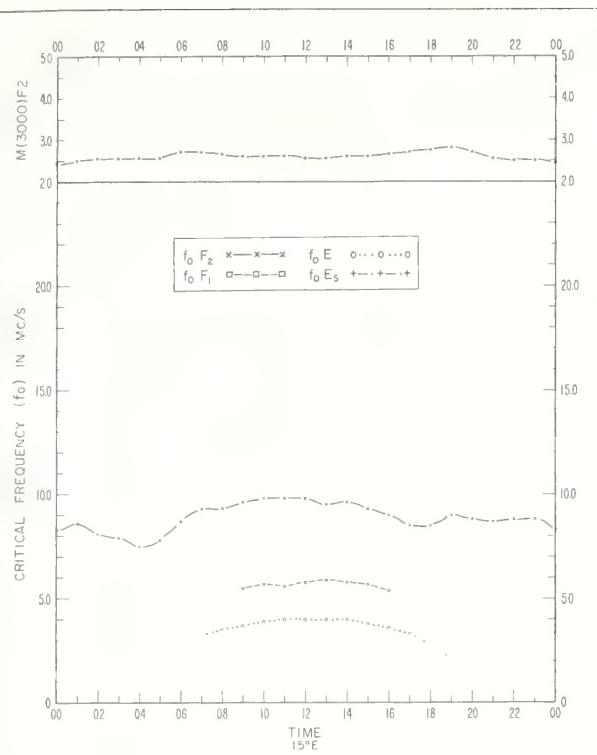
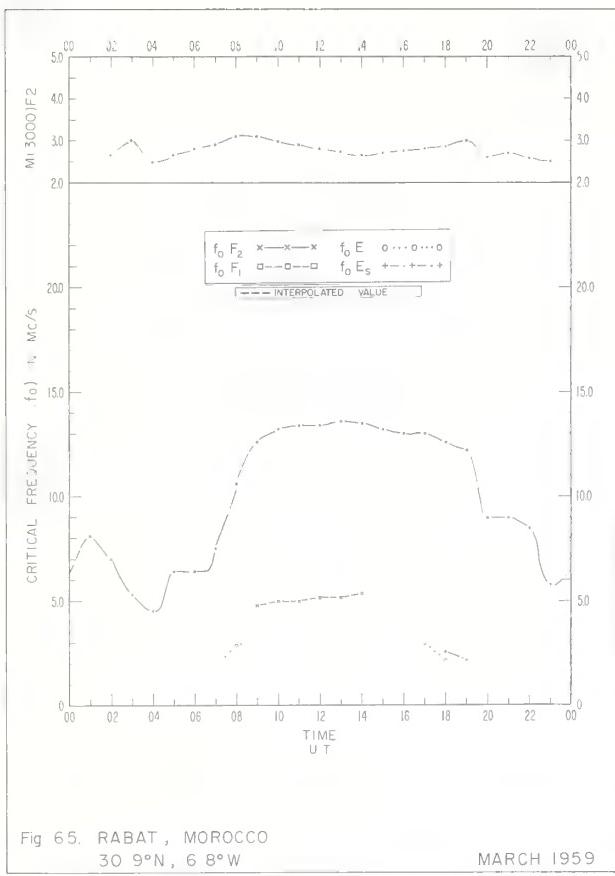


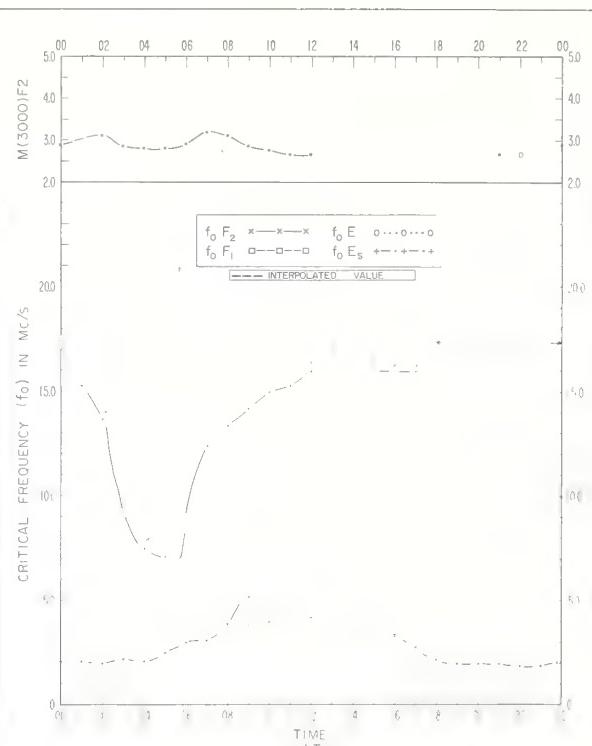
Fig. 56. TRIVANDRUM, INDIA
8.5°N, 77.0°E



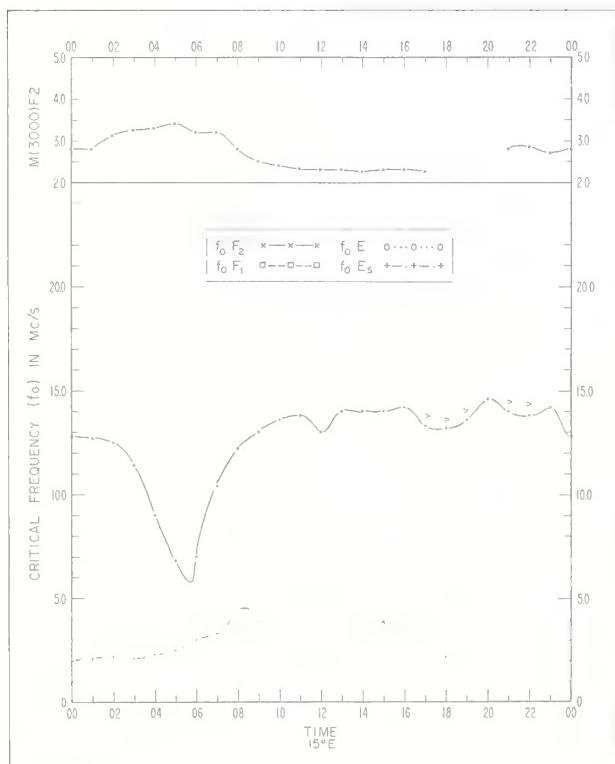


Fig. 65. RABAT, MOROCCO
30°9'N, 6°8'W

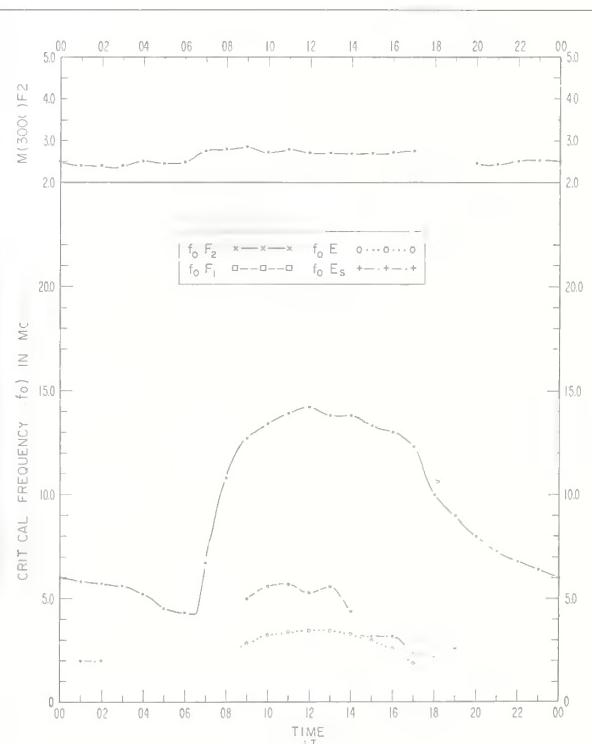
MARCH 1959

Fig. 66. TAMANRASSET, FRENCH W. AFRICA
22°8'N, 5°5'E

MARCH 1959

Fig. 67. BANGUI, FRENCH EQUATORIAL AFRICA
4.6°N, 18.6°E

MARCH 1959

Fig. 68. POITIERS, FRANCE
46.6°N, 0.3°E

FEBRUARY 1959

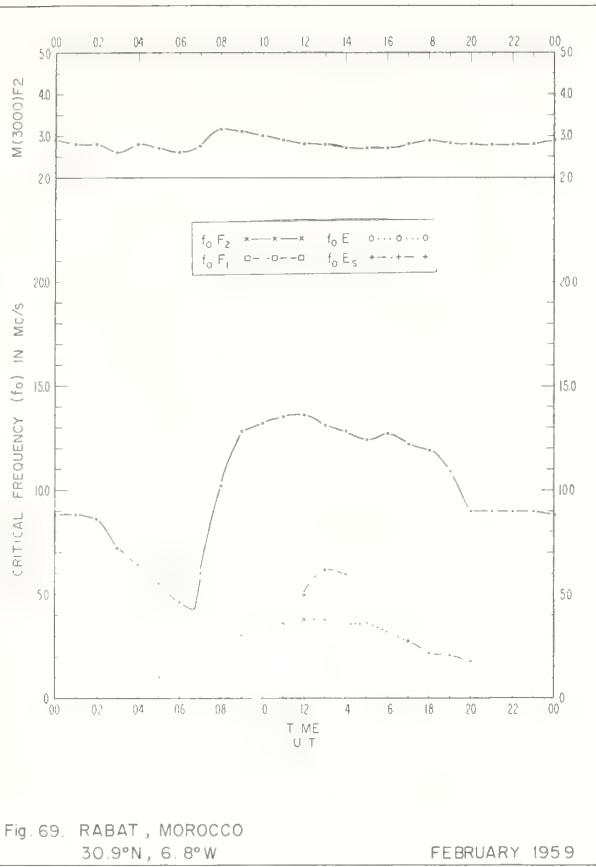


Fig. 69. RABAT , MOROCCO
30.9°N, 6.8°W
FEBRUARY 1959

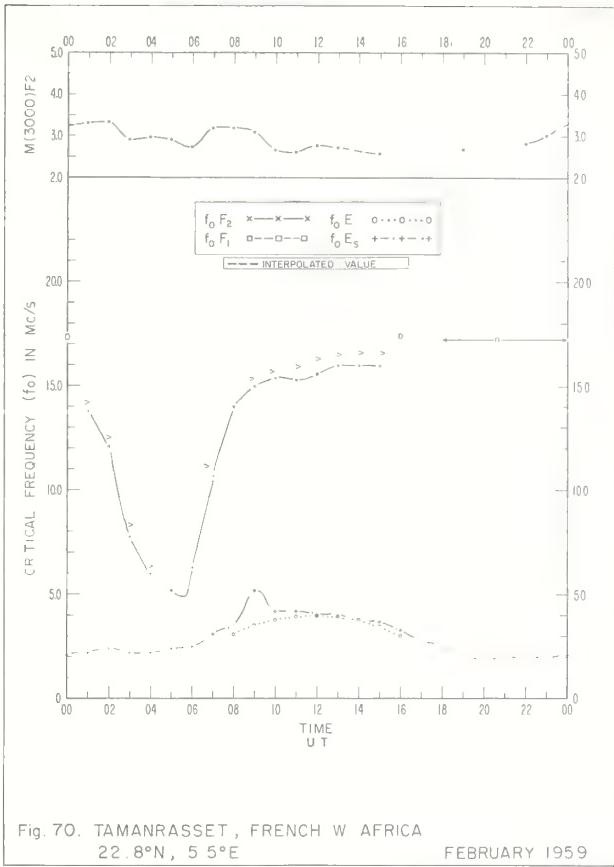


Fig. 70. TAMANRASSET , FRENCH W AFRICA
22.8°N, 5.5°E
FEBRUARY 1959

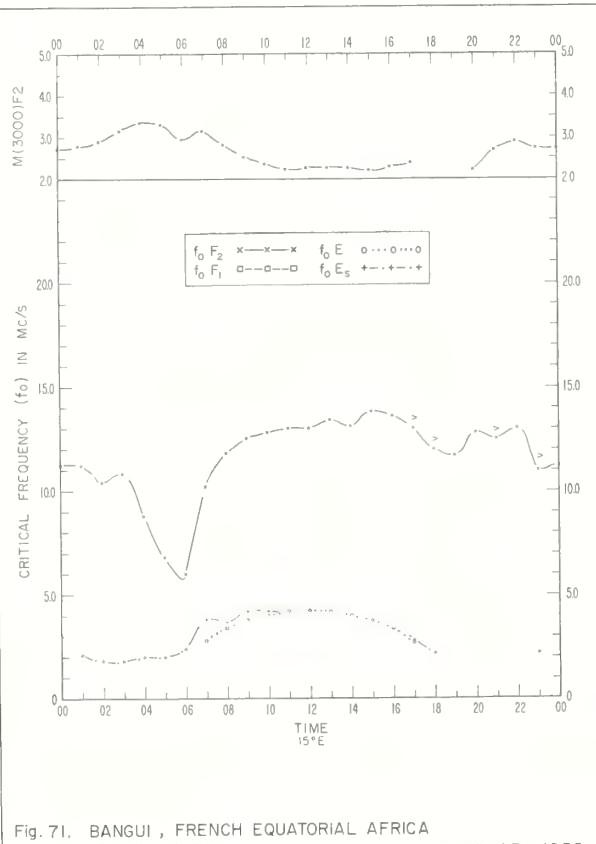


Fig. 71. BANGUI , FRENCH EQUATORIAL AFRICA
4.6°N, 18.6°E
FEBRUARY 1959

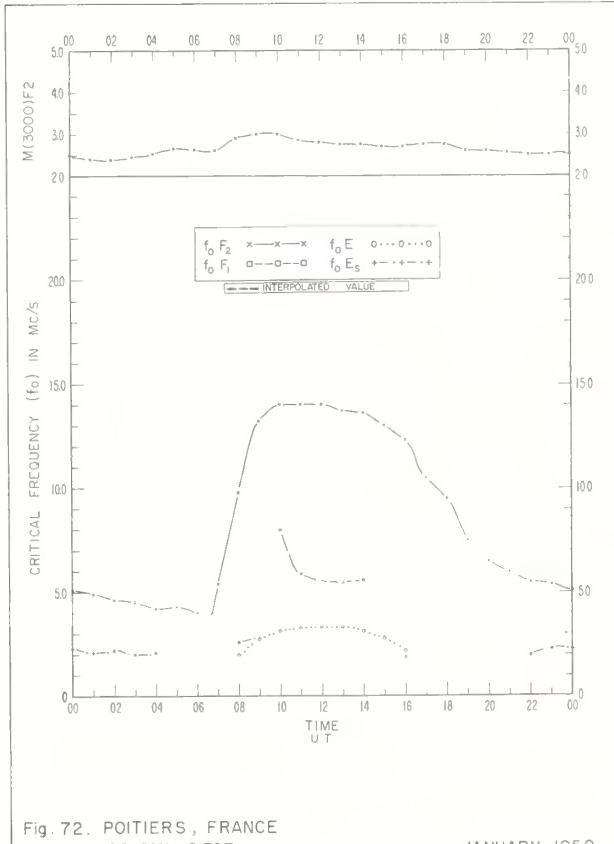
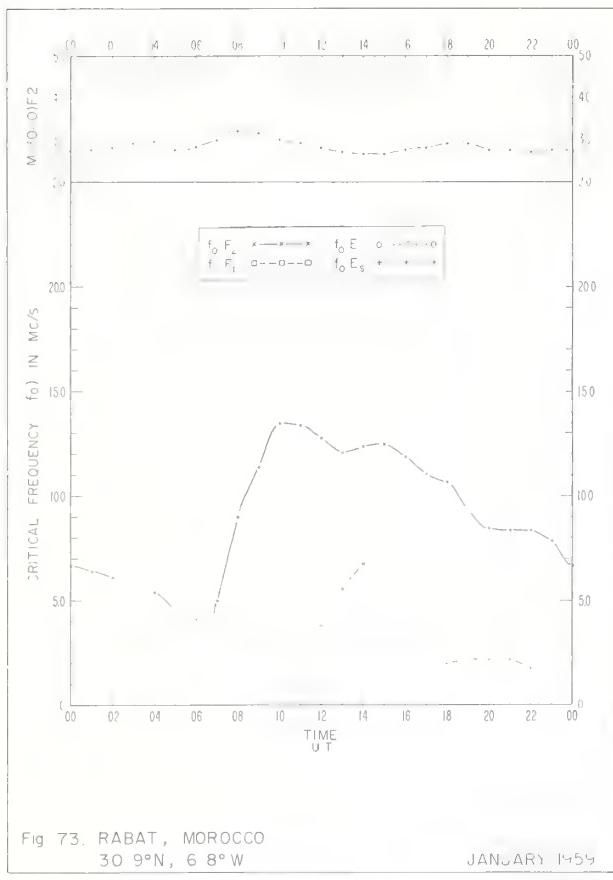
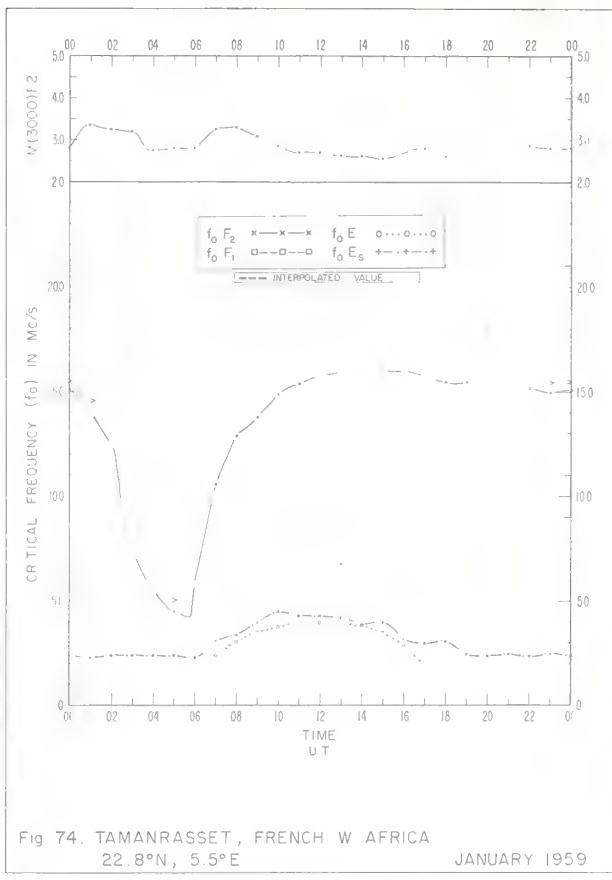


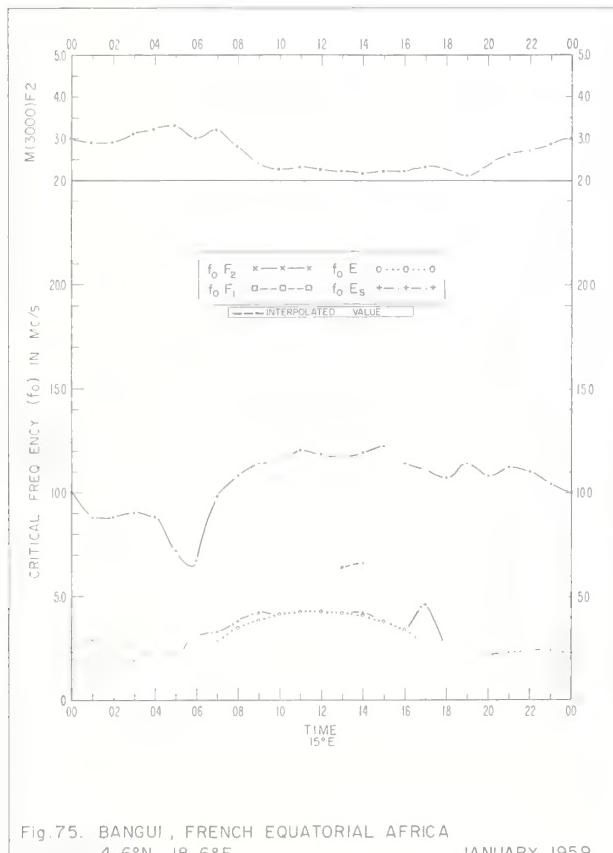
Fig. 72. POITIERS , FRANCE
46.6°N, 0.3°E
JANUARY 1959

Fig. 73. RABAT, MOROCCO
30°9'N, 6°8'W

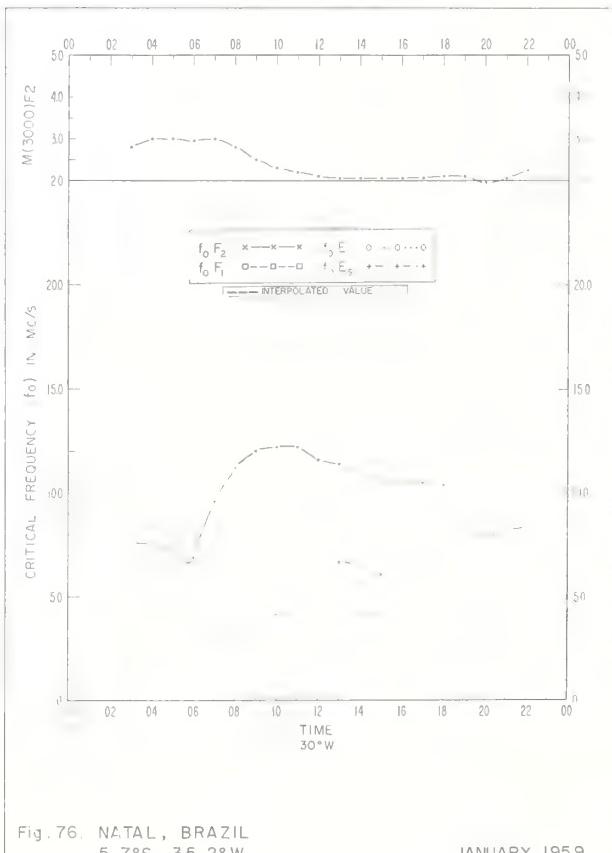
JANUARY 1959

Fig. 74. TAMANRASSET, FRENCH W AFRICA
22°8'N, 5°5'E

JANUARY 1959

Fig. 75. BANGUI, FRENCH EQUATORIAL AFRICA
4°6'N, 18°6'E

JANUARY 1959

Fig. 76. NATAL, BRAZIL
5°7'S, 35°2'W

JANUARY 1959

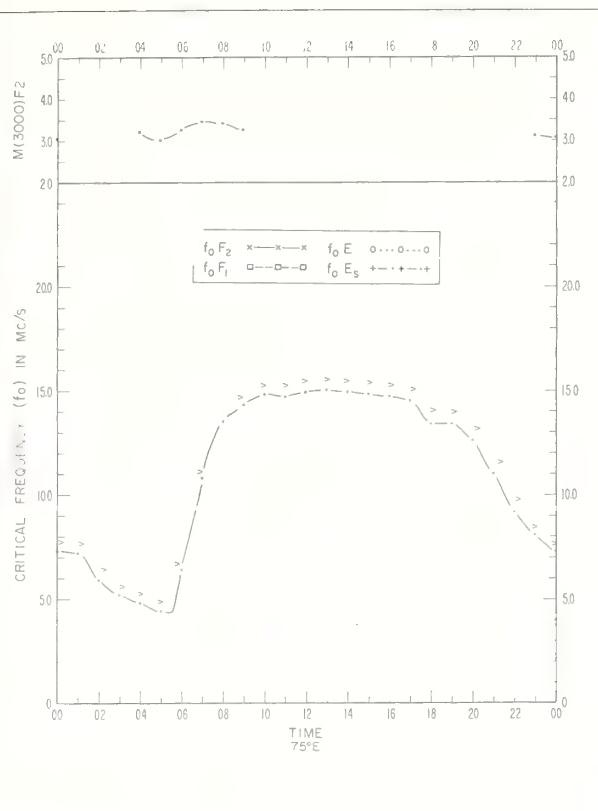


Fig. 77. DELHI, INDIA
28.6°N, 77.2°E

NOVEMBER 1958

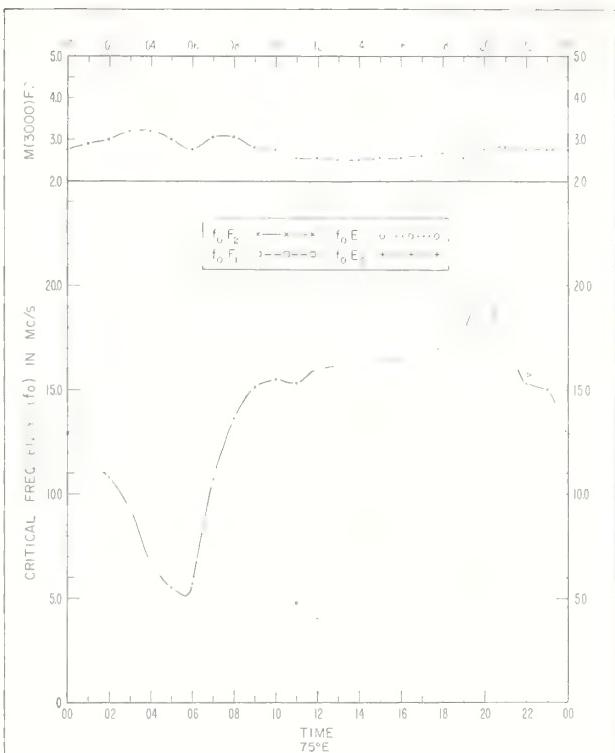


Fig. 78. AHMEDABAD, INDIA
23.0°N, 72.6°E

NOVEMBER 1958

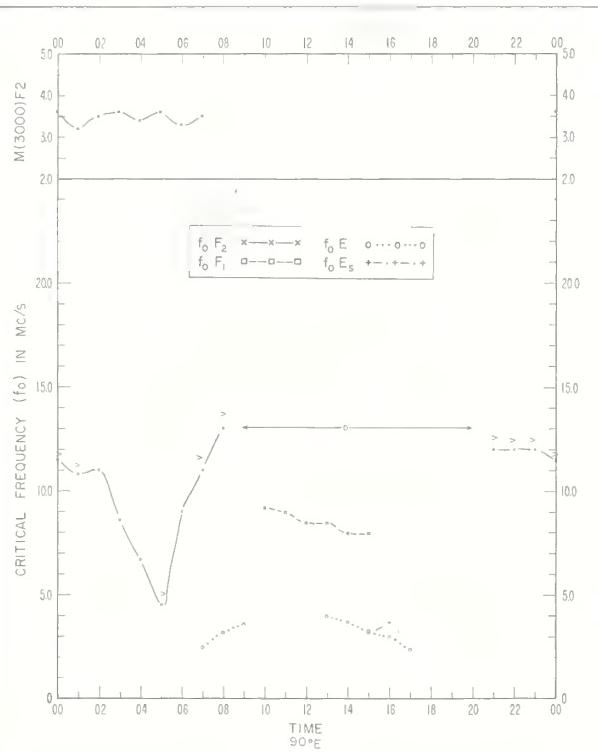


Fig. 79. CALCUTTA, INDIA
23.0°N, 88.6°E

NOVEMBER 1958

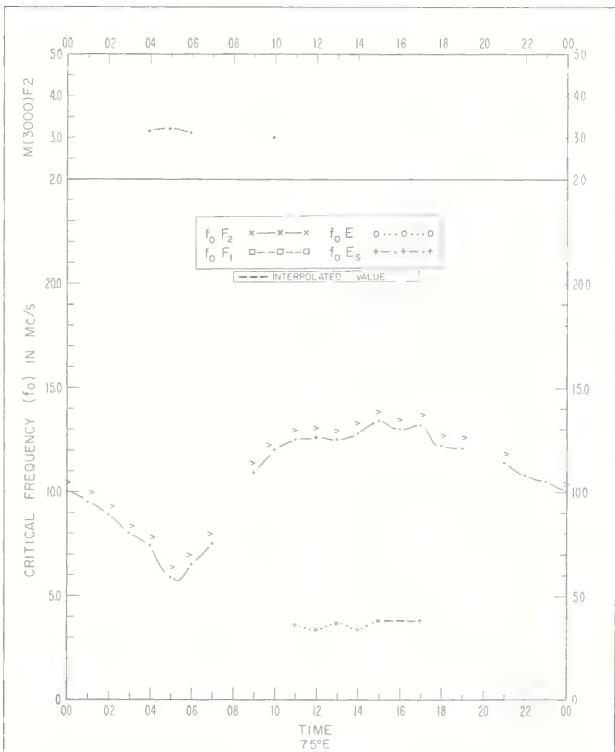
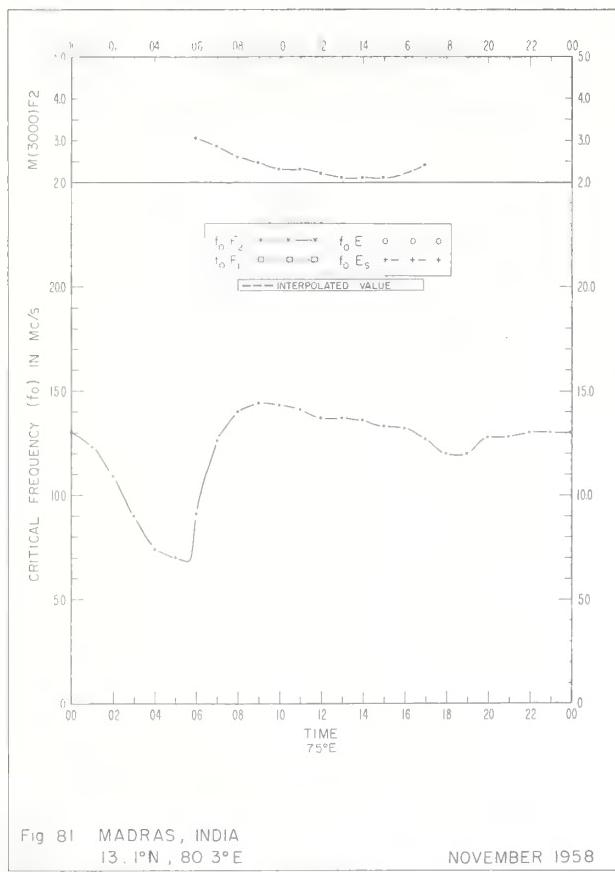
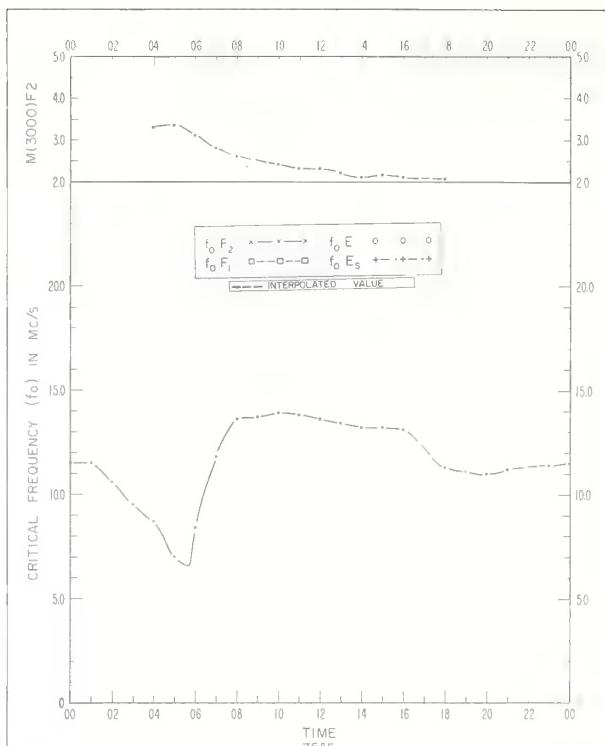


Fig. 80. BOMBAY, INDIA
19.0°N, 72.8°E

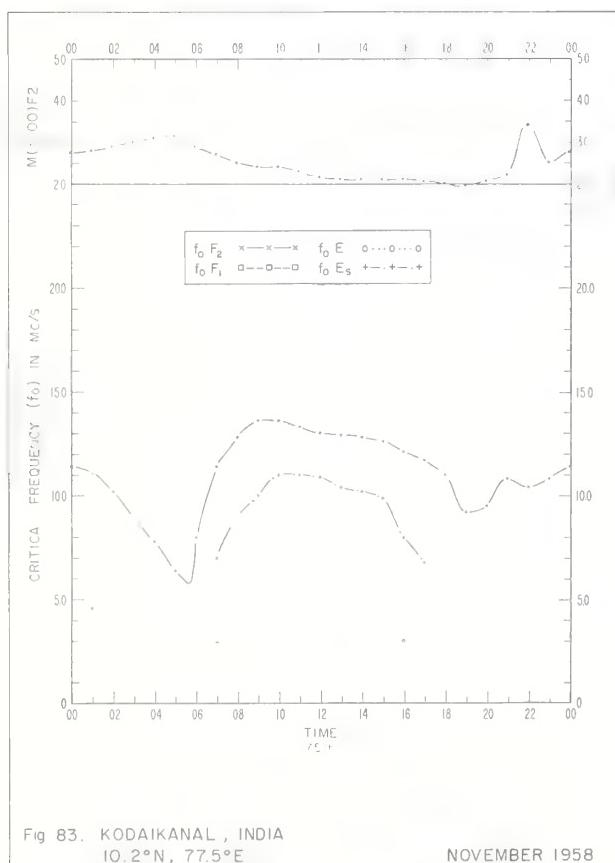
NOVEMBER 1958

Fig. 81 MADRAS, INDIA
13.1°N, 80.3°E

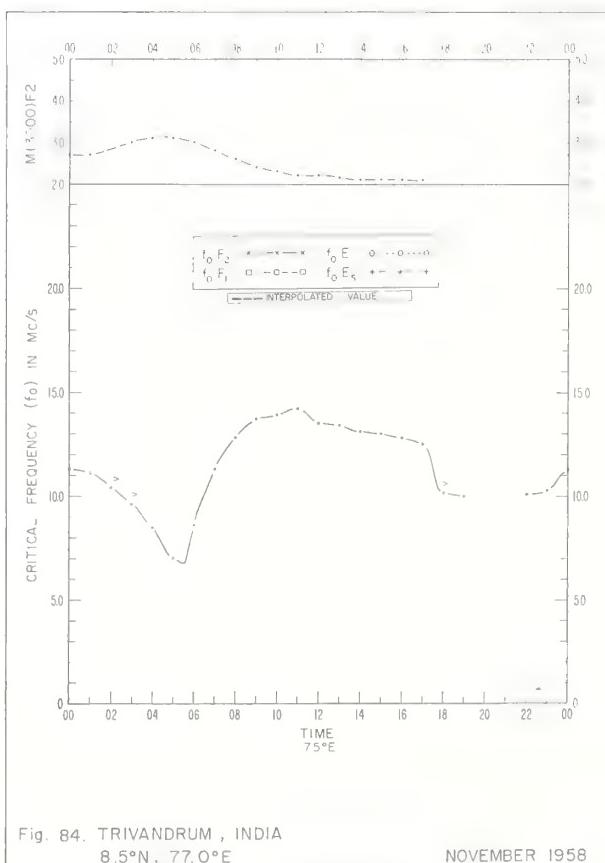
NOVEMBER 1958

Fig. 82. TIRUCHY, INDIA
10.8°N, 78.7°E

NOVEMBER 1958

Fig. 83. KODAIKANAL, INDIA
10.2°N, 77.5°E

NOVEMBER 1958

Fig. 84. TRIVANDRUM, INDIA
8.5°N, 77.0°E

NOVEMBER 1958

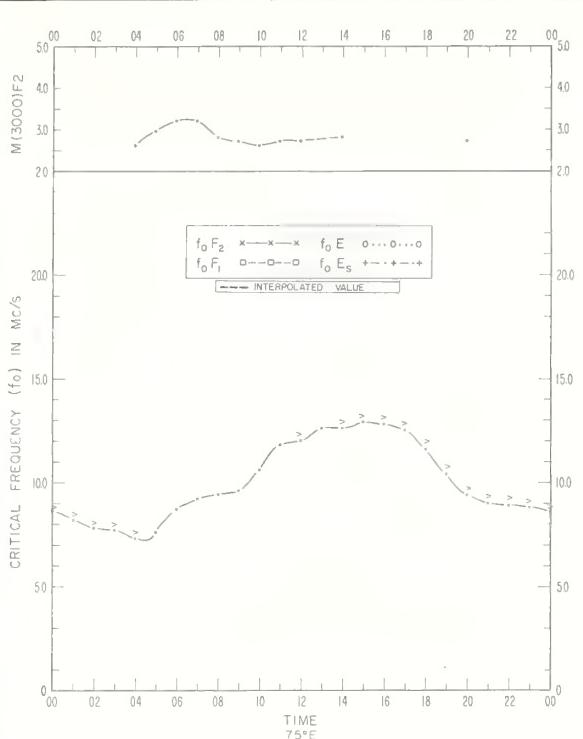


Fig. 85. DELHI, INDIA
28. 6°N, 77 2°E

JULY 1958

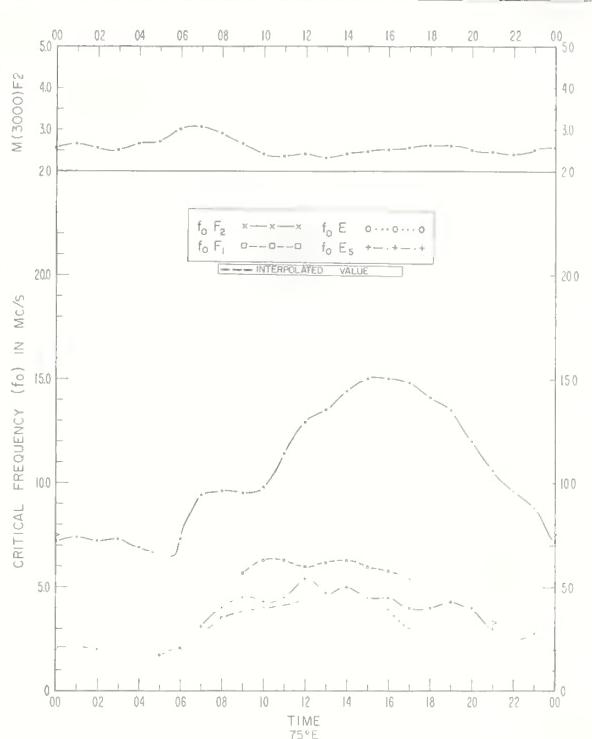


Fig. 86. AHMEDABAD, INDIA
23. 0°N, 72 6°E

JULY 1958

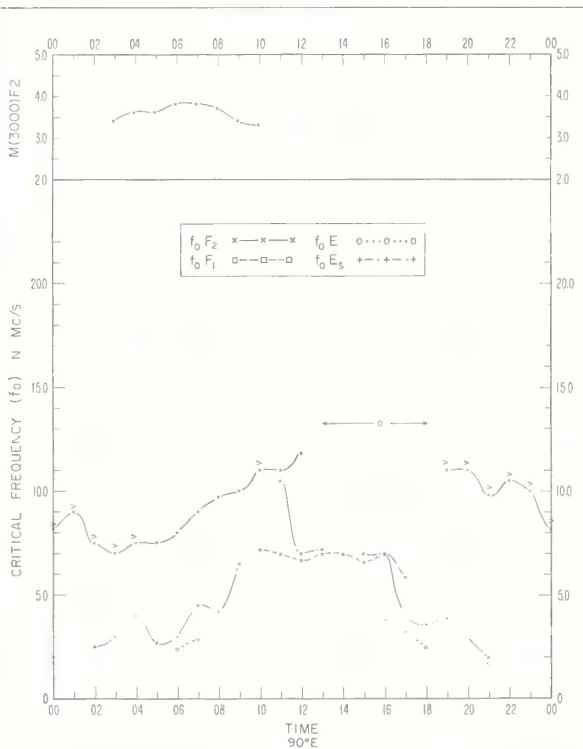


Fig. 87. CALCUTTA, INDIA
23. 0°N, 88. 6°E

JULY 1958

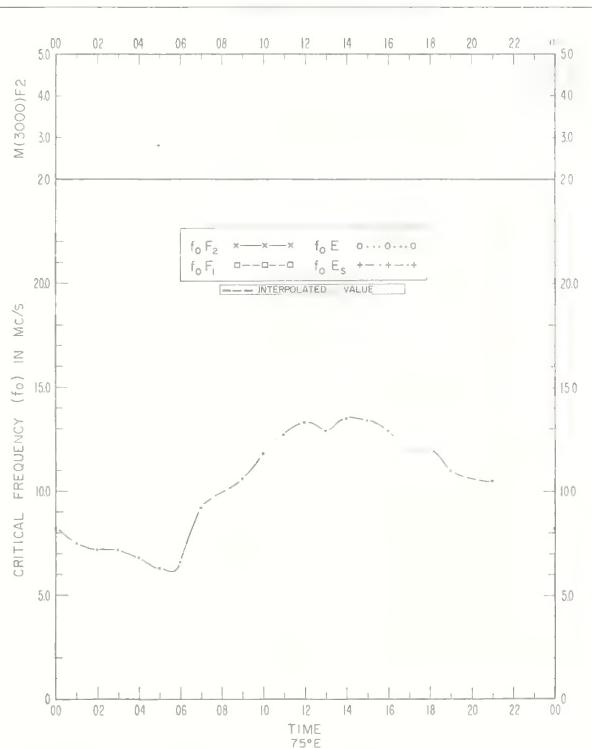
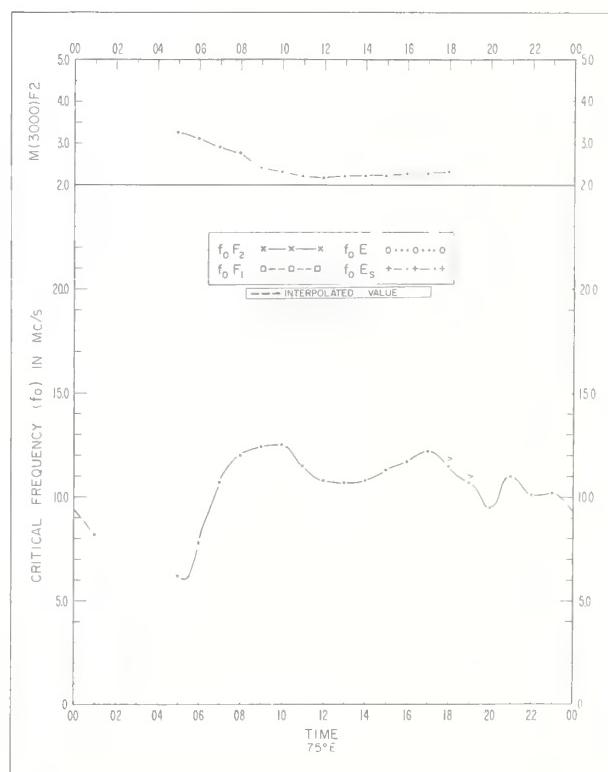
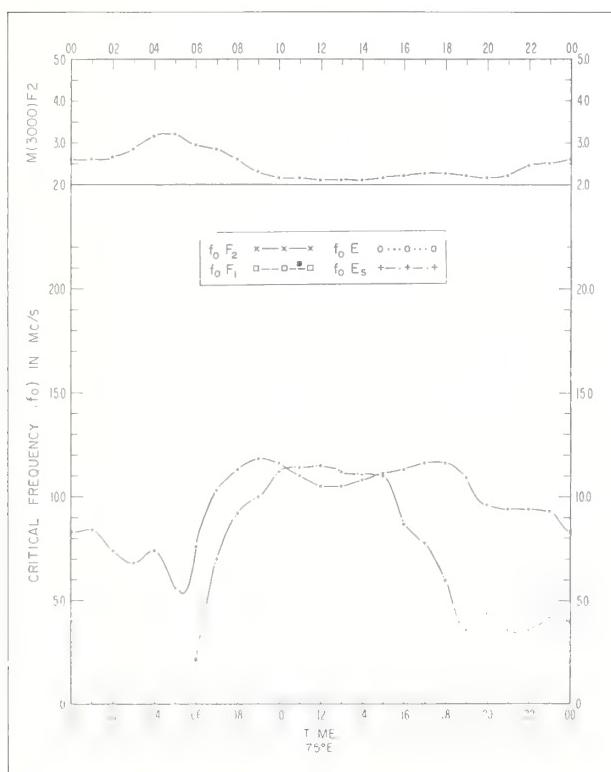
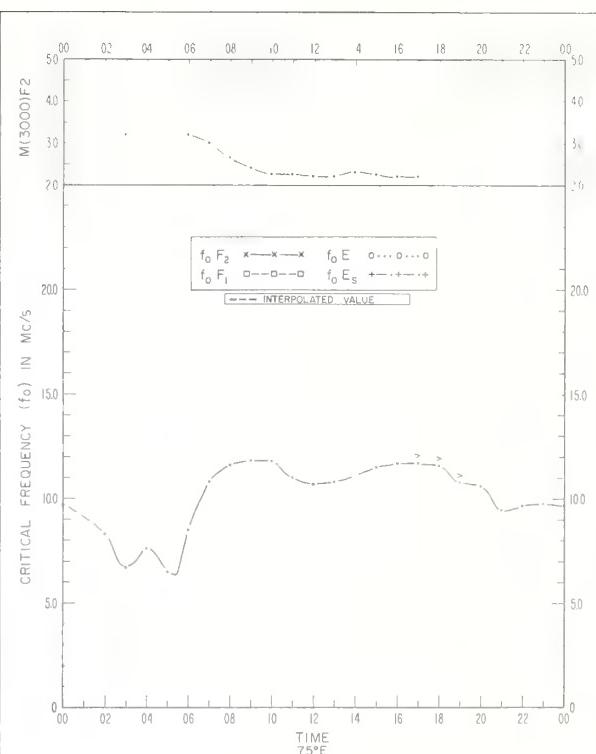
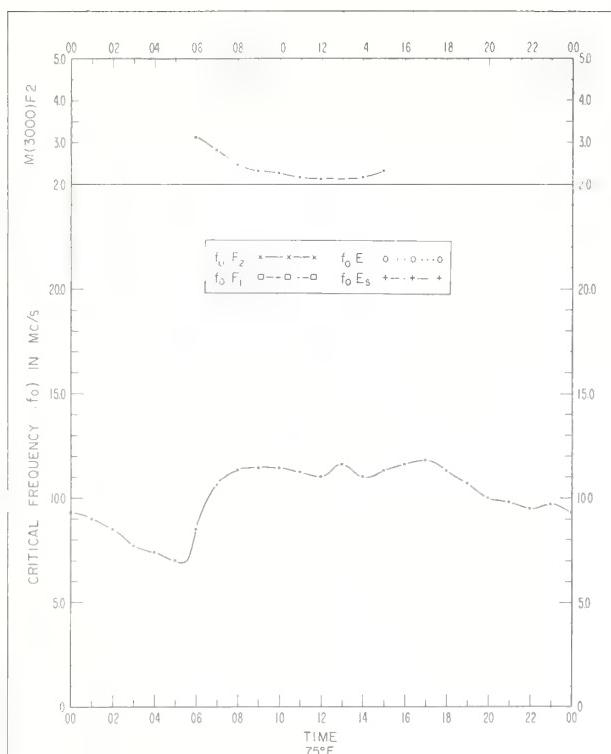
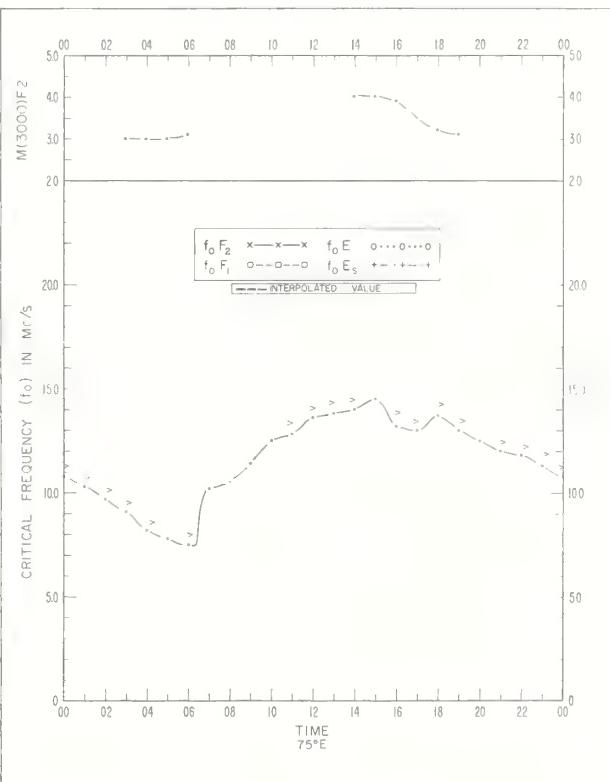
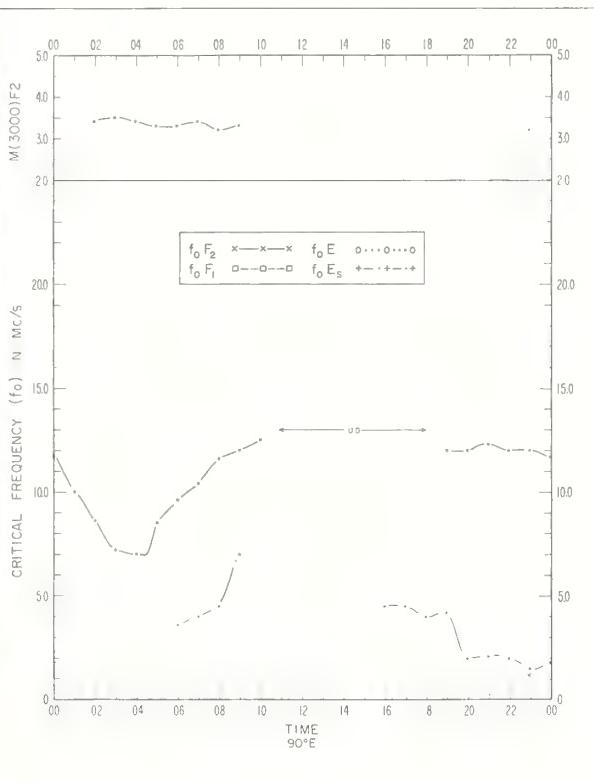
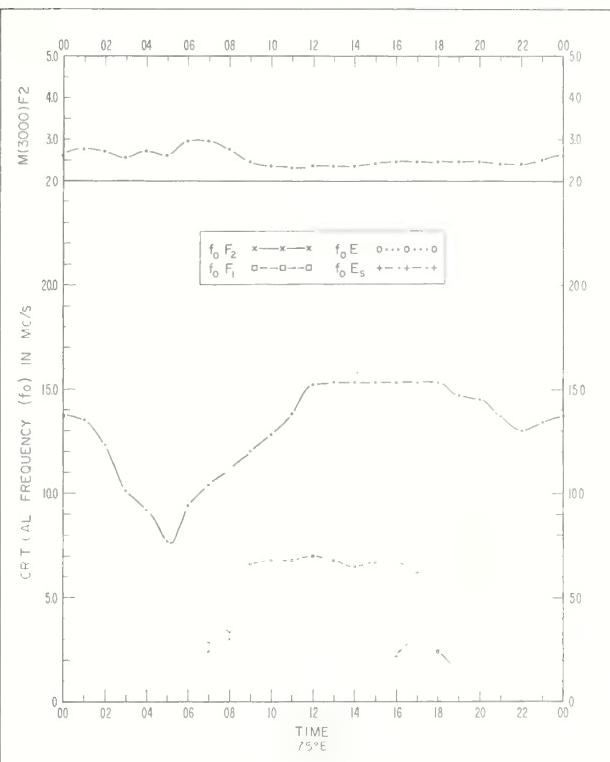
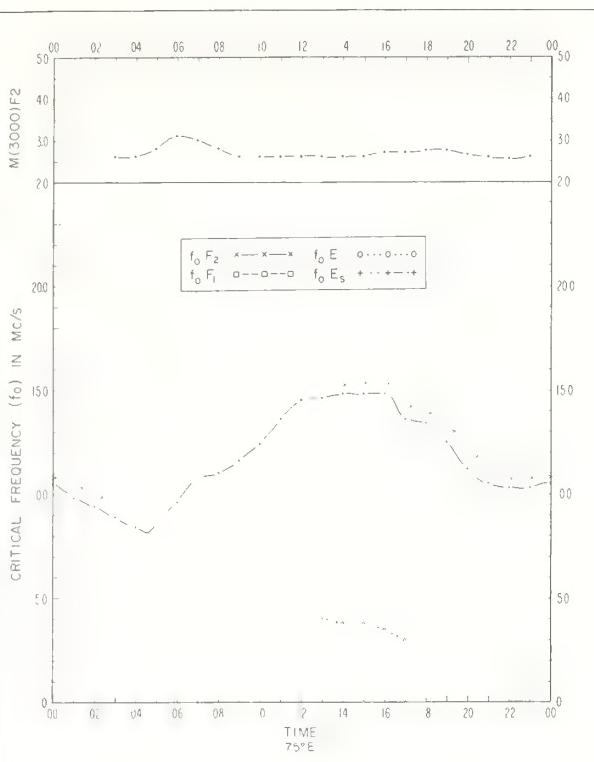
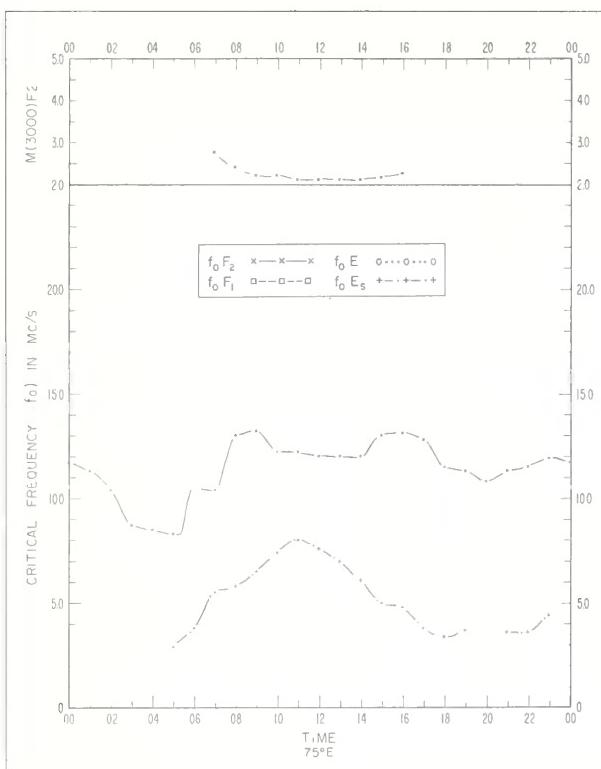


Fig. 88. BOMBAY, INDIA
19. 0°N, 72. 8°E

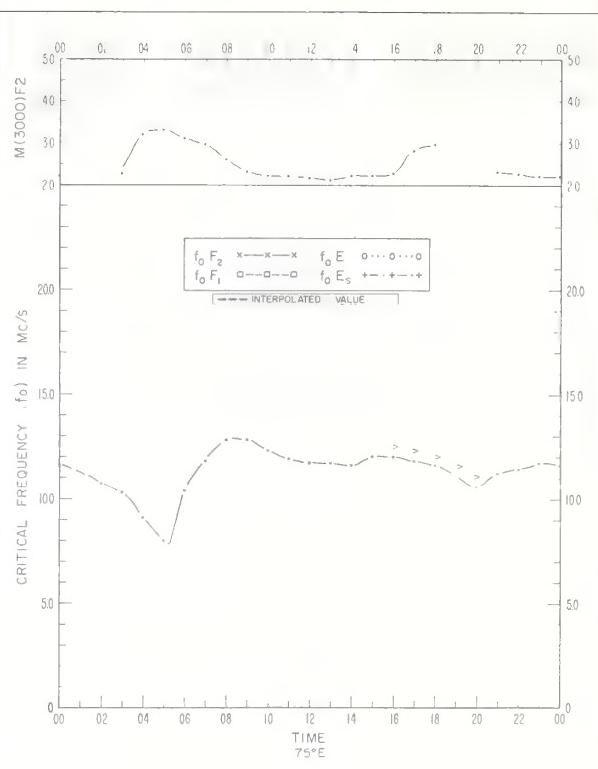
JULY 1958



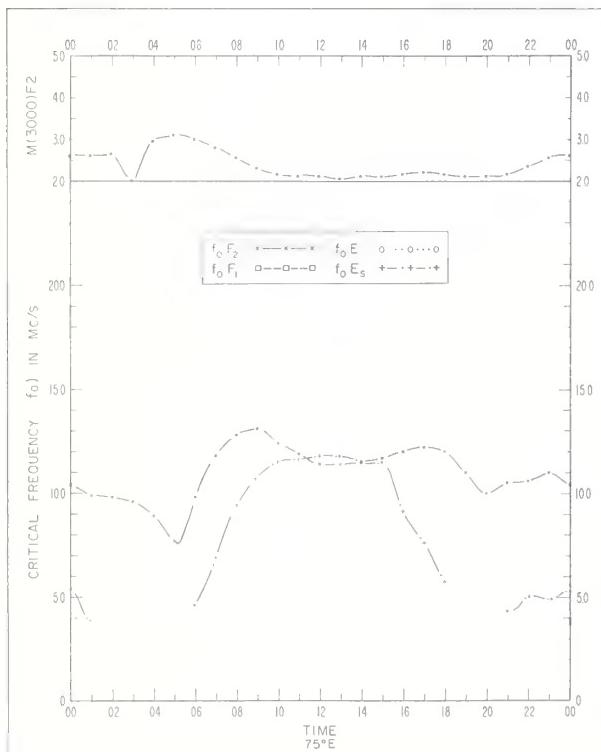


Fig. 97. MADRAS, INDIA
13°N, 80°3'E

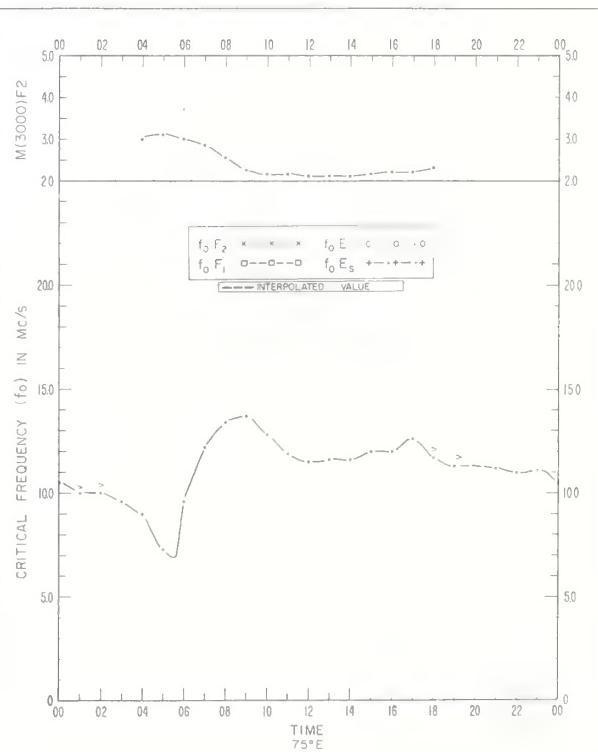
MAY 1958

Fig. 98. TIRUCHY, INDIA
10.8°N, 78.7°E

MAY 1958

Fig. 99. KODAIKANAL, INDIA
10.2°N, 77.5°E

MAY 1958

Fig. 100. TRIVANDRUM, INDIA
8.5°N, 77.0°E

MAY 1958

INDEX OF IONOSPHERIC DATA IN CRPL F222

PAGE
TABLE FIGURE

ADAK, ALASKA	1962	JAN.	2	27
AHMEDABAD, INDIA	1958	MAY	24	49
	1958	JULY	22	47
	1958	NOV.	20	45
	1960	JAN.	13	38
	1961	JAN.	9	34
	1961	APR.	8	33
	1961	AUG.	5	30
ANCHORAGE, ALASKA	1962	FEB.	1	26
BANGUI, FRENCH EQUATORIAL AFRICA	1959	JAN.	19	44
	1959	FEB.	18	43
	1959	MAR.	17	42
BOMBAY, INDIA	1958	MAY	24	49
	1958	JULY	22	47
	1958	NOV.	20	45
	1960	JAN.	13	38
BRISBANE, AUSTRALIA	1961	FEB.	9	34
CALCUTTA, INDIA	1958	MAY	24	49
	1958	JULY	22	47
	1958	NOV.	20	45
	1960	JAN.	13	38
CONCEPCION, CHILE	1961	AUG.	6	31
	1961	SEPT.	4	29
DELHI, INDIA	1958	MAY	24	49
	1958	JULY	22	47
	1958	NOV.	20	45
	1960	JAN.	13	38
DJIBOUTI, FRENCH SOMALILAND	1961	AUG.	5	30
DOURBES, BELGIUM	1960	AUG.	11	36

INDEX OF IONOSPHERIC DATA IN CRPL F222
 PAGE
 TABLE FIGURE

FAIRBANKS, ALASKA	1962	FEB.	1	26
FREIBURG, GERMANY	1961	APR.	7	32
	1961	MAY	7	32
	1961	JUNE	6	31
GODHAVN, GREENLAND	1961	AUG.	4	29
	1961	NOV.	3	28
GRAND BAHAMA I.	1962	JAN.	2	27
HUANCAYO, PERU	1961	DEC.	3	28
IBADAN, NIGERIA	1960	APR.	12	37
	1960	JULY	11	36
	1960	SEPT.	10	35
JULIUSRUH/RUGEN, GERMANY	1960	APR.	12	37
	1960	SEPT.	9	34
KODAIKANAL, INDIA	1958	MAY	25	50
	1958	JULY	23	48
	1958	NOV.	21	46
	1960	JAN.	14	39
LINDAU/HARZ, GERMANY	1960	SEPT.	9	34
MACAU	1959	APR.	16	41
MADRAS, INDIA	1958	MAY	25	50
	1958	JULY	23	48
	1958	NOV.	21	46
	1960	JAN.	14	39
NATAL, BRAZIL	1959	JAN.	19	44
	1960	JAN.	15	40
	1960	SEPT.	10	35

INDEX OF IONOSPHERIC DATA IN CRPL F222

PAGE
TABLE FIGURE

PARIS, FRANCE	1961	FEB.	8	33
POINT BARROW, ALASKA	1961	DEC.	2	27
POITIERS, FRANCE	1959	JAN.	18	43
	1959	FEB.	17	42
	1959	MAR.	16	41
POLE STATION	1961	MAR.	8	33
	1961	APR.	8	33
	1961	MAY	7	32
PORt LOCKROY	1960	APR.	12	37
	1960	JULY	11	36
	1960	SEPT.	11	36
PORt MORESBY	1961	MAY	7	32
RABAT, MOROCCO	1959	JAN.	19	44
	1959	FEB.	18	43
	1959	MAR.	17	42
RESOLUTE BAY, CANADA	1959	MAR.	16	41
	1959	JUNE	15	40
REYKJAVIK, ICELAND	1961	AUG.	5	30
	1961	NOV.	3	28
	1961	DEC.	2	27
ROME, ITALY	1959	JUNE	16	41
SAO PAULO, BRAZIL	1960	SEPT.	10	35
SLOUGH, ENGLAND	1960	SEPT.	10	35
TAHITI, SOCIETY IS.	1961	AUG.	5	30

			PAGE	
			TABLE	FIGURE
TALARA, PERU	1962	FEB.	1	26
	1962	MAR.	1	26
TAMANRASSET, FRENCH W. AFRICA	1959	JAN.	19	44
	1959	FEB.	18	43
	1959	MAR.	17	42
TANANARIVE, MADAGASCAR	1961	AUG.	6	31
TIRUCHY, INDIA	1958	MAY	25	50
	1958	JULY	23	48
	1958	NOV.	21	46
	1960	JAN.	14	39
TOWNSVILLE, AUSTRALIA	1960	APR.	12	37
	1961	SEPT.	4	29
	1961	OCT.	3	28
TRIVANDRUM, INDIA	1958	MAY	25	50
	1958	JULY	23	48
	1958	NOV.	21	46
	1960	JAN.	14	39
UPPSALA, SWEDEN	1959	JUNE	15	40
WHITE SANDS, NEW MEXICO	1961	JUNE	6	31
	1961	SEPT.	4	29
WINNIPEG, CANADA	1959	JUNE	15	40

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